

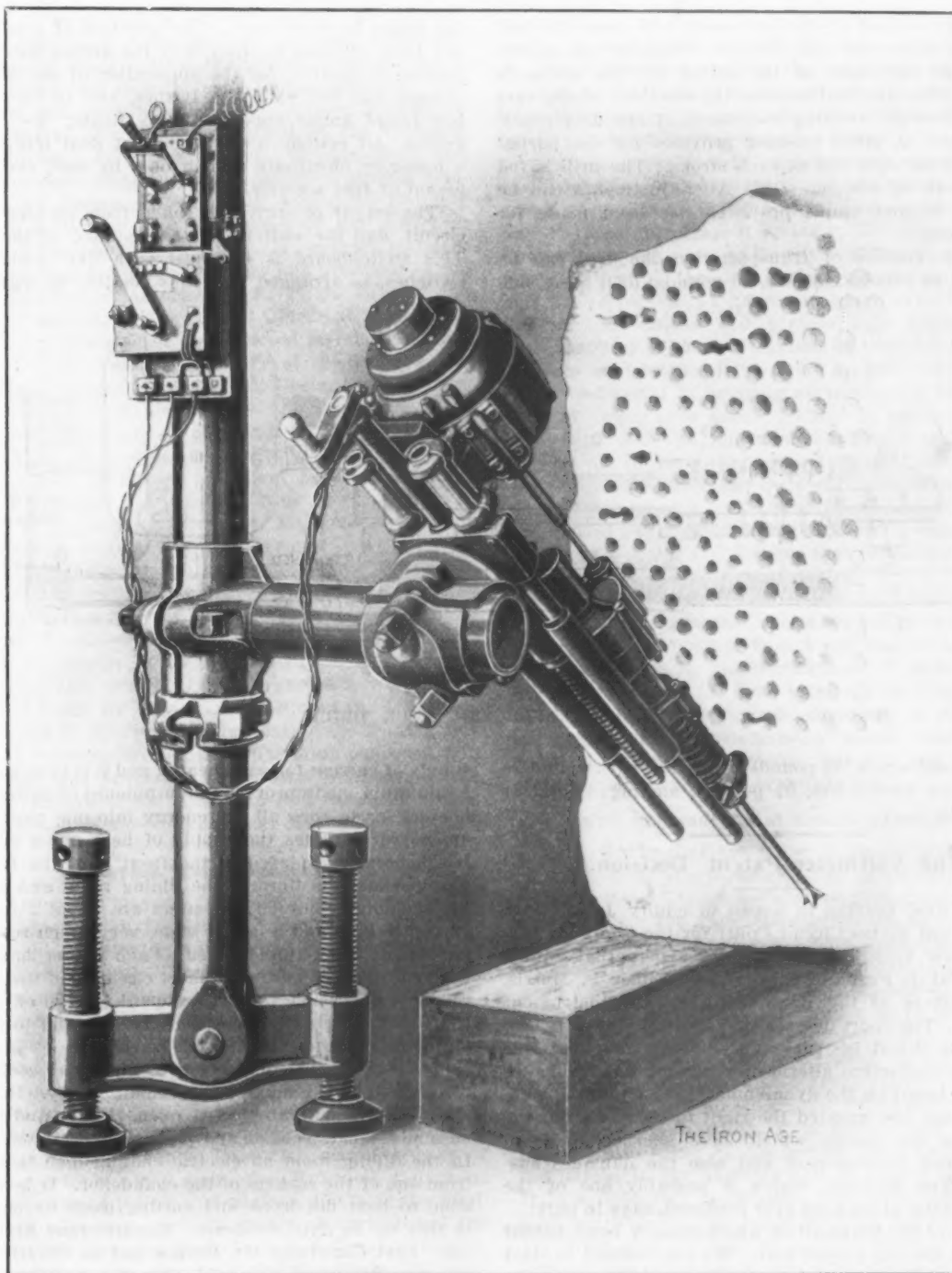
# THE IRON AGE

THURSDAY, DECEMBER 18, 1902.

## The Locke Electric Rock Drill.

The principle of the Locke electric drill is the converting of rapid rotary motion into reciprocating motion and the drill is, therefore, a percussion drill, somewhat similar to the usual form of air drills. It is essen-

extension shaft, B, Fig. 2, thus doing away with the usual flexible shaft of other electric drills. It can be detached easily and carried back from the work by one man, as it weighs only 95 pounds, or two men can handle the whole drill without disconnecting. The motor runs in ball bearings, as shown in the section. It is shunt



THE LOCKE ELECTRIC ROCK DRILL.

tially a ball bearing machine, is made dust and water proof, and only requires a few drops of oil at intervals of an hour or more to keep it in perfect working order. The shank or base of the drill is made to fit the clamp or saddle usually used upon the ordinary 4½-inch column or arm.

The motor is direct connected by means of a hollow

wound, ¾ horse-power, makes 2500 revolutions per minute and uses a 220-volt direct current. Any other motor, such as rotary steam or air, will operate the drill equally as well provided it gives the required number of revolutions. The drill strikes the rock 300 to 350 blows per minute, and the spring E, which imparts the forward motion to the piston, has a final compression at the end

of the back stroke of 720 pounds, thus giving a very great forward velocity to the piston. The drill will rarely, if ever, stick in the rock when crossing seams or soft spots, as the peculiar mechanism has much greater power to pull the drill back than the spring has to drive it forward.

The construction of this drill, which is built by the Locke Drill Company of 11 William street, New York, will be understood from the accompanying section. The motor A is mounted at one end of the guide bars upon which move the drill proper. At the outer end of the extension armature shaft B is a pinion engaging with a gear placed in the case. This gear is mounted upon a hollow shaft, within which the piston moves. The shaft is formed with an interior ball run or race arranged to engage the ball C. A cam is formed on the piston in engagement with the ball. It will now be understood that the revolution of the gear shaft will cause the ball to travel along the cam and so withdraw the piston against the resistance of the spring E. The piston is released when the ball reaches the shoulder of the cam and the forward striking movement of the drill rod F takes place. A rifled bushing provides for the partial turning of the drill rod at each stroke. The drill is fed to the work by the screw G. All adjustments can be easily made and ample provision has been made for quick repair.

For convenience of transportation the drill can be separated as follows: Motor, 95 pounds; drill base, side

copied the patented instrument even in its minute details. Few patents that come before the courts are entitled to more liberal treatment; this is a case where, upon the undisputed testimony, the inventor has accomplished something which has been of unquestioned benefit to the electrical world. The complainants are entitled to the usual decree for an injunction and an accounting."

### An Electrically Equipped House.

It is considered highly probable that no other house in America has so many applications of electricity made within its walls as the residence of Charles R. Barnes, 69 Glasow street, Rochester, N. Y. Mr. Barnes is the New York State electrician, which goes a great way in accounting for his many uses of the electric current in the house he calls home. The question of economy has not been allowed to enter into the arrangement of the various apparatus, for the application of electricity is a science and fad with Mr. Barnes, and in the work he has found ample opportunity to display his inventive genius. Of course, it costs a great deal more to heat a house by electricity than it does by coal, even in this period of fuel scarcity.

The supply of current is taken from an electric light circuit, and the switchboard is installed in the library. This switchboard is equipped with five double throw switches, so arranged that it is possible to regulate the

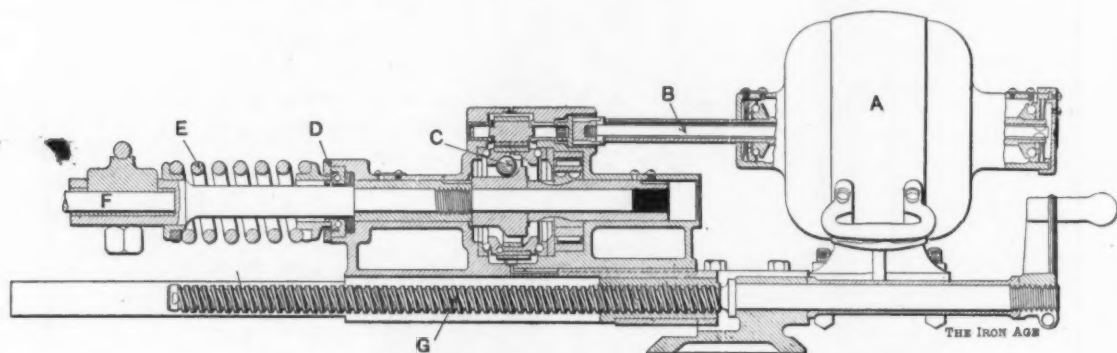


Fig. 2.—Longitudinal Section.

#### THE LOCKE ELECTRIC ROCK DRILL.

bars and feed screw, 53 pounds; front and back cylinders and interior mechanism, 91 pounds, making a total of 239 pounds.

### The Voltmeter Patent Decision.

In the final hearing in a suit in equity Judge Cox of the United States Circuit Court for the Southern District of New York has just granted a perpetual injunction against J. Franklin Stevens and Elmer P. Morris, doing business as the Keystone Electrical Instrument Company. The court decrees that the complainants, the Weston Electrical Instrument Company, have the sole right to manufacture alternating current measuring instruments based on the dynamometer principle; the complainants are also granted the right to recover from the defendants the profits which have accrued to them through such infringement and also the damages sustained. The decision, which is probably one of the most sweeping of its kind ever rendered, says in part:

"Many of the perplexities which usually beset patent causes are entirely absent here. We are enabled to start with several fundamental propositions which cannot be successfully disputed. Mr. Weston was the first to make a successful commercial voltmeter for measuring alternating currents. The device of the patent is small, simple, compact, easily operated and requires no preliminary adjustment; it can be operated at any angle by an unskilled workman and will measure direct as well as alternating currents. There were no instruments entitled to be considered as anticipations; the invention is not disclosed in any prior patent or publication. Infringement is clear; the defendants have

supply of current for each heater, and it is possible to give a minimum, medium or maximum amount of current to the heaters, or to turn all the energy into one room, which of course regulates the supply of heat given off. Electric heaters are placed in the front hall, the front and rear parlors, the library, the dining room and in all of the sleeping rooms. The heaters are about 2 feet long, 12 inches high and 8 inches wide, very much resembling an oblong box painted black. Each heater has a fuse that will blow in case of a short circuit. In the sleeping rooms it is possible for the occupant to turn off the current by a switch at the head of the bed, and to throw it on in the morning, if the room be cold.

The kitchen is equipped with electrical cooking devices that would make any woman happy. It has an electric stove with an electric oven. Coffee and tea may be made, meats cooked and pastry baked by electricity. In the dining room an electric chafing dish is operated from one of the sockets of the chandelier. It is also possible to heat flat irons and curling irons by electricity in this up to date residence. Electric fans are numerous. Last Christmas Mr. Barnes had an electric Christmas tree decorated, it is said, with about 600 one candle power lamps of three colors, red, white and blue, and this will again be a feature of the coming holiday celebration. Still another electrical feature of the house is an electro-therm, a novelty on which Mr. Barnes is likely to seek a patent. It is a flexible electric pad 14 x 10 x 1/4 inches, made up of a number of flexible wires, carefully insulated from each other, covered with asbestos and wound with flannel. It is used for medicinal purposes, and takes the place of a hot water bag or similar device.

## The Eight-Hour Bill.

### Recent Hearings at Washington.

WASHINGTON, D. C., December 16, 1902.—The hearings on the Eight-Hour bill before the Senate Committee on Education and Labor were concluded on the 12th inst., and the measure is now under consideration by the committee in executive session, the general expectation being that a report will be agreed to before the holiday recess adjournment, which will be taken next Saturday. As to the conclusions of the committee with respect to the bill, it can only be said that, while indications point to a favorable report, yet the expressed convictions of more than one member that the bill should pass appear to have been shaken by the extraordinary character of the testimony presented within the past week.

On no occasion during the five years this measure has been pending in Congress have so many important interests been heard against the bill as have opposed it at the hearing just closed after sessions occupying four days. The witnesses included A. C. Dinkey, general superintendent of the Homestead plant of the Carnegie Steel Company; Edwin S. Cramp, vice-president and general manager, and J. H. Mull, assistant general manager, of the Cramp & Sons Ship & Engine Building Company; J. Walter Jenks, manager of the American Steel Hoop Company; John Kirby, Jr., general manager of the Dayton (Ohio) Mfg. Company and president of the Dayton Employers' Association; E. F. Du Brul of the Miller & Peters Mfg. Company of Cincinnati, vice-president and commissioner of the National Metal Trades Association; A. H. Bullard, secretary of the Bullard Machine Tool Company of Bridgeport, Conn., and secretary of the Connecticut Manufacturers' Association; F. Howard Mason, secretary of the Buffalo Merchants' Exchange; D. A. Tompkins of Charlotte, N. C., manufacturer of cotton machinery; William M. Carroll of the American Leather Company of New York, vice-president of the National Association of Manufacturers; Marshall Cushing, secretary of the National Association of Manufacturers; Francis H. Stillman of New York, manufacturer of hydraulic machinery; Alonzo B. See of the See Elevator Company of New York; J. Linton Thompson of the Thompson & Norris Company of New York; Andrew F. Wilson of the I. S. Remson Company of New York, and others. Legal arguments were made against the bill by Joseph K. McCammon, Hilary S. Herbert and L. E. Payson, representing the leading iron and steel manufacturers and shipbuilding concerns, and its passage was advocated by Messrs. Gompers, Morrison and Duncan of the American Federation of Labor, and O'Connell of the International Machinists' Association.

#### Dayton Manufacturers.

John Kirby of Dayton, Ohio, the first witness, stated that he represented the Barney & Smith Car Company, car builders, employing about 2200 men; the Stillwell-Bierce & Smith-Vale Company, manufacturers of hydraulic machinery, steam pumps, &c., 1200 men; W. P. Cullahan & Co., manufacturers of hydraulic machinery, gas engines, &c., 300 men; the National Cash Register Company, manufacturers of cash registers, 2700 men; the Dayton Malleable Iron Company, manufacturers of malleable iron castings, 750 men; the Dayton Mfg. Company, manufacturers of railroad car trimmings, 225 men; the Davis Sewing Machine Company, manufacturers of sewing machines, 900 men; the Brownell Company, manufacturers of boilers and engines, 450 men; the Stoddard Mfg. Company, manufacturers of agricultural implements, 400 men; the Buckeye Iron & Brass Company, manufacturers of oil presses and brass goods, 300 men; the Computing Scale Company of America, manufacturers of computing scales, employing about 450 men. He also represented the Employers' Association of Dayton, Ohio, embracing about 200 different concerns. Continuing he said:

"Manufacturers of our city feel that the passage of the proposed bill would eventually greatly cripple the industries of this country. It is but a stepping stone for the enforced adoption of a general eight-hour law

throughout the country, and if such a result would follow we feel that instead of accomplishing what the advocates of the bill are seeking—namely, the welfare of the wage earner—the reverse would be the result. In the first place the general eight-hour day would necessarily increase the cost of production at least 25 per cent. That being the case, it seems to me, and to all of us, that it would mean a limitation of the products of this country to its own borders, or practically so. That seems to me to be the most serious objection to the bill as it stands now, although the bill relates, of course, as I understand, to Government contracts only. Then, again, there are many establishments which do work under Government contracts, either as subcontractors or as contractors direct. We, as manufacturers, understand thoroughly that it is almost impossible and thoroughly impracticable to operate a portion of our plant or employees for eight hours a day on certain work and nine or ten hours a day on other work. It would simply mix up everything and cause very serious complications. As I understand the bill, if the employees are worked more than eight hours a day on Government contracts there is a penalty attached, and that penalty is imposed by an official of the Government, which would make it a very serious problem to straighten the matter out. It would impose great difficulties and complicate the work, and it would be an injustice to the employer. In addition to these objections it seems to me this is a matter Congress has no right to interfere with. It should certainly be left to the contracting parties, the employer and the employees. I have had great experience with the working classes and I thoroughly believe that a large majority of the workmen of this country are opposed to the passage of this bill. An enforced eight-hour day would result in bringing all mechanics down to the level of 'eight-hour men.' I know of many mechanics who would like the opportunity and who are very anxious at all times to improve the opportunity to work overtime and to increase their earnings. That was my own feeling when I was at the bench and at the lathe, and I used every possible opportunity to earn as much money as I could, and I think that is the reason why I am not an 'eight-hour man' to-day."

Upon being asked by the chairman whether "in this free country a manufacturer could not refuse to take a Government contract if he did not like its terms," Mr. Kirby answered in the affirmative, but added that the United States was far from being a free country, so far as the manufacturers were concerned, in view of the activity of labor organizations, whose representatives were advocating the pending bill and the "infamous anti-injunction and anti-conspiracy bill."

#### The National Metal Trades Association.

E. F. Du Brul of the Miller & Peters Mfg. Company of Cincinnati, vice-president and commissioner of the National Metal Trades Association, said that he appeared especially for the association of which he was commissioner, composed of about 200 firms employing in the aggregate about 20,000 men, while about as many more were employed by members of local associations allied with the national body. He said a large proportion of the members of the association were contractors on Government work, supplying machinery of all kinds, machine tools, projectiles and a great variety of manufactures of iron and steel, &c." "Our association," said he, "is an organization of manufacturers which was brought into being by the unrestrained demands of labor unions in our business and to control the business. It is a defensive association, pure and simple, dealing with nothing but the labor question for our members. We think that this bill has a great bearing on the business of the members of our association. It is our belief that the labor unions are going too far. We have no quarrel with their attempts to better their condition. We have no quarrel with any reasonable attempt to increase social benefits that might come from the short hour movement, but we feel that the short hour movement is a social movement which will work out in time and which is working out every day gradually and economically. We feel that it is unwise to force this movement in any way. We find in our business that the unions, and par-



ticularly the machinists' unions, with whom we have our principal dealings, have a way of restricting the output of the factories. The international officers, as I understand, disclaim, as a rule, any attempt to interfere with or restrict production, but I am judging by the fruits. They say that they could produce as much in eight hours as they now produce in ten. I know and believe that no man can restrict production without falling short 25 per cent at least. Our association was organized to regulate that very condition. In machine shops we are putting in effect what is called the premium plan. The machinists' union is opposed to the increase which the premium plan brings about. That increase is just in proportion with the increased production. The machinists' union has on a number of occasions struck and demanded that this plan should not be allowed to go into effect, and has demanded its abolishment the same as piecework in a number of instances. That is one of the demands that we feel justified in fighting right from the start.

"This bill, as it is drawn, seems to our association to be forcing things. There is a great movement taking place all over the country which the public does not quite understand, and is not yet quite familiar with. That is the movement of the organization of employers pure and simple to handle labor questions. These organizations in time come to certain agreements with the unions affecting their business. These agreements have in a great number of cases been found satisfactory and in others unsatisfactory. Our own agreement with the machinists' union is unsatisfactory. They had a strike last year, and the strike, I believe, was called a short hour strike. The short hours were not an issue with our association during the strike, which we fought and won. We had already granted short hours, and in consideration of the reduction of the working hours we felt that no limitation should be put upon the management of the shop or the production.

"The fact is that the machinery business is not on a nine-hour basis, as some testimony in this hearing tends to show. The machinery business—the manufacturing trade—is practically on a ten-hour basis, although there are places in different localities where they work nine hours. That is their privilege. They can work six hours if they choose. We find that a union or any association which gets concessions before they are ready for them are more harmed than they are benefited. Personally, I believe the day will come when the increase of skill and the increase of production on account of the automatic machinery coming in will bring about shorter hours or a shorter working day. That is a social movement. Our whole fight last year was upon the proposition that we are tying our hands in the restriction of production. It was plainly specified in our agreement, which was broken by the strike, and which provided for arbitration, that there was to be no restriction on production, but that agreement was broken. Our conviction was so firm on that point that we had it specified in the agreement that there should be no restriction of production. I have innumerable cases in the office of the National Metal Trades Association showing deliberate restrictions by men, authorized by the International Association of Machinists.

"As to the effect of this bill on our people we may take as an illustration the case of the manufacturers in Cincinnati who are making machine tools for the Government. They cannot run those shops longer for the market and shorter for the Government. It would amount to an increase in the cost of the Government work. Suppose the Government work were made in separate shops? It would mean an increase in the cost, which, after all, the public has to pay for. It has been our experience that coercion seems to be at the base of the labor question, and this looks to us like a coercive movement. It is equivalent to saying: 'This man shall not be permitted to work over eight hours a day.' That looks to us as though the American Federation of Labor were attempting to coerce. They are not able to force the other man. They take the wrong method of accomplishing their purpose. They cannot make use of the Government machinery and legislation

as a club on the great number of men who are not ready to-day for the eight-hour movement. They have not come to it yet. Otherwise they would all be affiliated with the Federation of Labor, which they are not."

#### A. H. Bullard's Testimony.

A. H. Bullard, secretary and treasurer of the Bullard Machine Tool Company, and secretary of the Connecticut Manufacturers' Association, said that his company and others in the same trade throughout Connecticut had come to the conclusion that it would be impossible for them to supply materials or do work for the Government under the proposed bill. Continuing, he said: "We manufacture machine tools of standard types for the open market, but when the Government calls for our tools we are obliged to comply strictly with certain specifications, which would not meet the conditions of the trade in general and therefore have to be made to order. It is a question with us whether any of our goods would be excepted from the operation of this bill and certainly many of them would not. Occasionally we build a machine for Government work only, for making cartridge cases, for work on gun carriages, castings, projectiles, &c., and if we built such a machine for the open market we might put it in stock and carry it for a hundred years and there would be no call for it unless the Government would buy it. This bill would certainly hit us on every such machine and would embarrass every department, for these goods are carried through in common with commercial goods in every process of manufacture. We put in a lot of castings into the foundry and a few of them may be for the Government, but on those Government castings we could only work eight hours, the result being that we would be obliged to limit all our work to eight hours, for we could not separate the castings or segregate the working force. The same thing would be true in the machine shop and throughout our plant. No manufacturing establishment could be conducted partly on an eight and partly on a ten hour basis, and at the present time, especially it would be an utter impossibility to hire men who would work one day eight hours on Government work and another day ten hours on commercial work, with no regular time of service.

"One of the most objectionable features of this bill is that it prohibits a man from working more than eight hours, no matter how much he may desire to do so. Suppose he has been sick a week and wants an opportunity to make up a little lost time. Under this bill he cannot do it. Further, the whole establishment is placed at the mercy not only of the Government inspector, but of any one who may report to him an alleged violation of this law, under which a penalty of \$5 per day for each man who works a moment over eight hours, is assessed. These reports may not be true, but if the inspector believes them the money is withheld from the contract price and there is absolutely no relief short of special legislation by Congress."

#### Daniel A. Tompkins.

Daniel A. Tompkins of Charlotte, N. C., a manufacturer of cotton and cotton oil machinery, argued that the movement to reduce the hours of labor must be permitted to work itself out in accordance with natural laws and that to attempt to force it was a very serious mistake. "Formerly," said he, "many of our industries worked 14 hours a day, but that practice has gone out entirely without legislation. The facts with regard to the long days of old are wholly misunderstood, however. While it was a long day, it was an easy-going, slipshod day in which the men took things easy, instead of the busy, clean cut ten-hour working day of present times. I am reminded in this connection of a story of old Mr. Mason, of the Mason Machine Works, well known in New England, who in the early days ran his machine shop on an 11-hour basis. It was an easy going shop where the workman who wanted a glass of beer could slip out and get it and nothing would be said. He could cut his time a little in the morning and at noon or any other time and it would be passed over. One day a delegation called on



the old gentleman while he was busily employed at his desk. He knew what was up, but pretended not to see them. Finally the spokesman said, 'Mr. Mason, we wish to better our condition; we would like to work ten hours a day.' He promptly replied, 'Well, I am mighty glad to hear it; you never did do it!'

"Now, in the course of time, with improvements in machinery and in the skill of operatives it may be practicable to go to an eight-hour basis, and if it is the manufacturers will know it just as soon as the workmen and will be prompt to take the step. You cannot force such a thing by act of Congress, and especially by an act which prohibits a man who wants to get on in the world from working a little harder than his fellows."

#### **A Protest from Henry G. Morse.**

Thomas Hopkins, representing the New York Shipbuilding Company, then read the following protest submitted by President Henry G. Morse of that company: "We desire to enter our protest against the passage of the bill now before you restricting contractors from working more than eight hours per day on Government work, for the following reasons:

"1. Under the proposed law we would either have to refuse to take Government work or would be required to do merchant work on the same eight-hour basis, for the reason that it is impossible to operate a plant excepting on a uniform number of hours per day on each class.

"2. The cost of war ships built under such a law would be fully 20 per cent. more than at present and would not result in any better work. We do not understand it to be the province of Congress to give something for nothing.

"3. We have taken occasion to obtain the average price of labor in several of the shipyards of Great Britain and find that we are paying labor in this country an average of 33 per cent. more than is paid there. We have also investigated the cost of living and find that there is a very slight difference, from which we conclude that laboring men in this country under present conditions are very much better paid than in any other country, and any law which would tend to further increase this would be very detrimental to the shipping interests in this country and to the country at large in preventing exportation.

"4. It is desirable for the good of the country that conditions should be favorable for ship owners to have their ships constructed at home and that the money paid for ships should be retained in this country. At the present time the cost of iron and steel is more than 50 per cent. higher than in Great Britain or Germany. The cost of auxiliary machinery and outfit for ships averages from 15 per cent. to 50 per cent. more than in Great Britain and the cost of labor 33 per cent. more; the average cost of a ship to-day being from 35 per cent. to 40 per cent. more than in Great Britain and Germany. It would therefore seem to be against the interests of the ship owner, the shipbuilder and the country at large to pass any law which would still further increase the cost of ships.

"5. About four years ago the cost of material and labor was such that it was deemed probable that a yard built on modern principles, with all possible labor saving devices, might be able to construct ships in this country at a cost of not more than 15 per cent. above the cost of foreign ships, and it was deemed probable that the owners of ships would be willing to pay this additional cost. With this belief the stockholders of the New York Shipbuilding Company have expended during the last four years nearly \$10,000,000, and have produced a plant which is credited with being the most fully equipped of any in the world, and under normal conditions would be able to build ships at a cost not exceeding 15 per cent. to 20 per cent. above foreign built ships. At the present time the conditions are abnormal, both as regards labor and material, and any action on your part looking to the further increase of cost would be detrimental to the best interests of the country at large.

"6. Labor is receiving in the shipyards as much pay as in other classes of manufacture; otherwise, it would not be employed in these busy times in constructing

ships, but would seek other employment; therefore you should pass no law which is detrimental to a particular industry at a time and under conditions when no hardship has been imposed upon any class by the conditions now prevailing in the shipyards.

"7. The writer believes that this effort to pass an eight-hour bill for certain classes of work emanates from the representatives of the labor organizations of the country, who hope by the passing of this bill to embarrass the shipbuilding companies and eventually to force them to an eight-hour per day basis, with the hope that this may sooner or later prevail in all branches of manufacture. Should their hopes be realized the cost of all that we have to export from this country would increase from 20 to 25 per cent. and the possibility of exporting would be effectually prevented. No individual increases his wealth by consuming all he produces; the same is true of the country at large. The wealth of this country came from our being able to dispose of more of our products than we consumed. Why should you take action to prevent shipbuilders from following in the steps of other successful manufacturers?

"We presume that all members of Congress understand that labor expects to earn as much in eight hours as it now does in ten. The navy yards of the country are working on an eight-hour basis and are paying fully as much per day of eight hours as the manufacturers do for a ten-hour day."

#### **Francis H. Stillman.**

Francis H. Stillman of New York, a manufacturer of hydraulic machinery, said that in his shops he worked 54 hours a week and the pending bill would seriously interfere with his operations. His Government work amounted to about \$15,000 a year, and while only a small part of his total product, it would be extremely difficult to carry it upon an eight-hour basis. Chairman McComas suggested that inasmuch as some of the goods manufactured by the witness were actually sold in the open market he would be exempt from the operation of the bill, but Mr. Stillman was not disposed to take that view of the case, asserting that he had just made a contract with the Government for \$5000 worth of work, practically all of which was of a very special character. If the bill did not apply to his case he did not think it would to anybody unless they were engaged exclusively upon Government work.

James Henry Mull, assistant manager of the William Cramp & Sons Ship & Engine Building Company, protested against the passage of the bill on the ground that it would be impracticable as applied to shipbuilding, in which industry it was necessary at times to take advantage of daylight, of tides and of various other conditions that could not be modified to fit an eight-hour day. Fifty or 60 per cent. of the Cramp Company's work was for the Government and it would be impossible to maintain two different time systems in the same yard, as great dissatisfaction would be aroused among the men if as much pay were granted for eight hours' work on a Government job as for ten hours on merchant work. Continuing, Mr. Mull said:

"We undoubtedly antagonize the labor unions, who are the champions of this bill, because we have inaugurated a contract system in our work whereby the man becomes a sub-contractor and he uses his own free will as to whether he shall work eight, ten or twelve hours a day. This bill would prevent that man from enjoying the personal liberty which he now has of carrying on his business, and we oppose the bill, not only in the interest of ourselves, but in the interest of the workmen, who, in the past, when a strike was about to take place that it was claimed would benefit them, have stood by us and said that they did not want to change their working hours. I ought, perhaps, to speak more specifically and in detail of the system that is in operation with us. For instance, about 50 per cent. of the entire construction of a ship is carried on under this contract system. A drawing will come out from the office, for instance, of the keel of a ship. A proposal for bids to erect and assemble this keel is written up by a contract committee, and specifications are made, just the same as the

Government will give out a specification for a bid on the ship in its entirety. This proposal is posted up in conspicuous places throughout our yard. The workmen at the meal hours and before and after working hours go and view the places where the contracts of certain parts to be bid upon are posted. On these specifications there may be 1000 pieces of work, and the workman bids on one, naming the price which he will charge the company for the completed work. He figures on the time it is going to take to complete a contract for any part he may decide upon. They do not give us the number of hours. I do not wish to have it construed as piece work. It is not. It is purely and simply a contract system. Then we select from all the bids submitted to us that of the most competent man with the fairest price, and he receives the job. It is not always the lowest bidder who gets the job. We have it printed in our specifications that he must be a competent man and be passed upon by the foreman. This man will receive the contract and he proceeds to carry it out. The system has this effect, that he has the privilege of using apprentice boys and improvers. These are boys who have never had an opportunity to learn a trade and who have perhaps started to work in the shipyard as rivet heaters, passer boys or general utility boys. After they become 19 or 20 or 21 years of age it would be unfortunate for those boys to have thrown away the greater part of their lives without having had an opportunity to learn a trade, but they receive the opportunity through this contract system. By this method they are enabled to learn something alongside of an intelligent and efficient mechanic, and they are practically serving an apprenticeship, although, perhaps, of age. When the boy becomes an improver we give him an opportunity to earn enough money to pay his board and to clothe himself and to get along nicely.

"If this bill should go into effect, as it is largely supported by the American Federation of Labor and the International Association of Machinists, those particular organizations would not permit the system of contract, which we employ in our yard and under which it is possible for a man to become an intelligent business man and capable some day or other of going into any line of business and contracting in any particular line of work that enters into the construction of our line of business. Therefore, the bill in that respect would be unjust, in my opinion. In the summer time we do not attempt to regulate the length of the men's working day. We do not care to control them. If they want to come at 4 o'clock to save working in the sun and heat of the day—if they wish to work in the early morning and late at night—that is their privilege. The bill would destroy their privileges as free American citizens."

Mr. Mull said the bill would make it almost impossible to conduct a trial trip of a war vessel according to Government requirements, and especially if there should be a breakdown at sea his company would be fined a large amount. Referring to statements previously made that the Cramp yard discriminated against organized labor, Mr. Mull said that whatever preference might be given to nonunion men was owing to the fact that they attended strictly to their business. Union men did not render as efficient service to their employers, chiefly for the reason that they recognized two masters and gave much time and attention to talking to their fellow workmen in their endeavor to induce them to join organizations and to instill into their minds a spirit of discontent. Mr. Mull spoke with great emphasis, continuing as follows:

#### **Tampering with Battle Ship Machinery.**

"I have known of men who spoiled work and who tried to prevent the sailing of a battle ship by the disarranging of her machinery. They were all labor union men, prominently connected. Some were aliens, members of the International Association of Machinists, brought over here from England, and affiliated with the association in the strike in Philadelphia at the time. They engaged in service on board the United States transport 'Thomas,' which was to carry troops for the United

States Government during the Spanish war—work which we wished to carry on for the United States Government by special request. That work was done in our yard, and every effort was made to hasten the work, and our loyal men were so patriotic that they kept at their work until they fell in their tracks. Notwithstanding that, we had men connected with the International Association of Machinists there in the yard conspiring to prevent the ship from sailing. It came out through the reporters on the newspapers who had attended their meeting. The object was to show that their strength was greater than we admitted it to be. They claimed that they had large bodies of men there who were going to quit. They did it to injure our company. While we were fitting out the 'Thomas' and preparing for the trial trip of the 'Alabama,' which was about to take place, we discovered that we had enemies in our ranks. We found that certain parts of the 'Alabama's' machinery had been taken apart and disarranged. The steering gear brackets were disordered and broken. It meant, had we not discovered it, that when the ship left the dock she would have surely gone aground and probably been destroyed. Another circumstance I wish to cite: They had taken valves off the dynamo engine and put nuts and bolts in the pipe. Had we started up without having discovered that there would have been a collapse of the electric light machinery; and what would cause greater consternation than total darkness in a battle ship?"

Mr. Mull was questioned closely by Chairman McComas and Senator Dolliver as to whether the perpetrators of these crimes were punished, to which Mr. Mull replied that the company's counsel, after full investigation, advised that it would be better not to give publicity to the incidents, because there was a strike on and the necessities of the Spanish War were such as to make it desirable to avoid disturbances. The company had the documents and the evidence to bear out his statements, however. The War Department sent a special agent to Philadelphia to investigate the affair on the transport "Thomas" and found the facts to be as stated. In this case the guilty man was discharged but not prosecuted.

#### **The Testimony of J. Walter Jenks.**

J. Walter Jenks, manager of the American Steel Hoop Company, stated that he appeared to contradict the evidence given by M. M. Garland of the Amalgamated Association of Iron and Steel Workers at an earlier stage of the hearings. The statement that there was an agreement between the Republic Iron & Steel Company and the Amalgamated Association that no man should work over eight hours was wholly false, that period being the minimum limit instead of the maximum. When, himself, negotiating with the rate committee of the Amalgamated Association, two of his best rollers declared that under no condition would they consent to an eight-hour limit and he felt convinced that if the matter were left to a vote 70 per cent. would take the same view. It was a great disadvantage to a mill to run on an eight-hour basis, for the reason that the largest output was invariably produced during the latter half of the day and the output was more than proportionately cut down if the time was reduced from ten to eight hours. The members of the committee asked numerous questions on this point, which Mr. Jenks amplified by stating that the men warmed up to their work during the day and produced a larger and better output toward the end.

#### **The Testimony of A. C. Dinkey.**

A. C. Dinkey, general superintendent of the Homestead plant of the Carnegie Steel Company, then made an interesting statement based upon a special investigation made by him subsequent to the hearings on the bill in the House as to the practicability of a compulsory eight-hour day in the manufacture of iron and steel on a large scale. Mr. Dinkey said in part:

"I do not know of any large plant in the United States which does not work 12-hour shifts in the open hearth steel smelting departments. An armor plate is an entirely different piece of steel from that used in boiler



work, ship work or tank construction, although it is all made in similarly constructed furnaces. In the latter case we have simply a highly refined product of pig iron or pig iron and scrap, in which the various degrees of hardness required are controlled chiefly by the various quantities of carbon contained in the finished product. In the case of an armor plate we not only use the best steel product that we know how to make, but, in addition, such materials are used that the resulting product shall be an alloy of iron, chromium and nickel. To produce the best quality of such material under a compulsory eight-hour law I believe to be impracticable, and I believe that I should have no difficulty in making such alloys, in competition with another who was compelled to work on an eight-hour requirement, show uniformly superior results. I feel positive in my own mind that the operation of tempering an armor plate is in the same class; if one person were compelled to operate under an eight-hour requirement, that I should have no trouble, operating by our own system, of exceeding his results in any competitive trial.

"With respect to labor difficulties, cost of production and output, my conclusions are that our industry would be very seriously affected if we should attempt to operate under the requirements set forth in this bill. You can readily understand that it would be somewhat impracticable for us to change our factory methods on 97 per cent. of our output to accommodate the requirements placed upon 3 per cent. of the output which is for the Government. If we should inaugurate an eight-hour day for part of the works we would immediately face two complaints. The eight-hour men would receive too little per diem and would consequently be dissatisfied, and the 12-hour men, if any change were made in the hour rate of the eight-hour men, would immediately ask for the same hour rate granted to the dissatisfied eight-hour men.

"Now the 97 per cent. of our product is sold in competition with neighboring mills in our district and similar mills in other districts, and these mills, as I said before, are operating under a 12-hour shift. In selling our product we must meet this competition. If it were possible to operate at a less cost with eight-hour shifts, I would like to say that our organization contains enough skilled men in the operation of steel mills to insure the adoption long since of such a method if favorable results could have been secured thereby. I wish to say again that in my opinion it is altogether impractical to work a part of the men in a given factory on eight-hour shifts and the balance on 12-hour shifts, and that the result of such a trial will be strife, turmoil and dissatisfaction.

"There is another impractical point in a compulsory eight-hour requirement which would often operate to the very great embarrassment of any management, and would probably be the cause of many violations. I refer to the absence of men from their accustomed posts. Suppose a craneman were absent or late, this would tie up a division of the shop perhaps until one could be found; a melter or heater sick or absent, a piece of work nearly finished in departments where we work only single turn where by working an extra hour the completion of the item would be forwarded a whole day if this amount of work was put on. Successful factory managers or foremen would find such requirements, I believe, greater hardships than the legitimate work of their department demanded. A successful factory manager must always have before him the question of quality, quantity and cost of his output, and I do not believe that any amount of legislation or contract requirements can relieve him or his business of the force which will operate in case his product will not compare favorably along these lines with the same product produced by his neighbor."

Upon the conclusion of the testimony Secretary Cushing of the National Association of Manufacturers laid before the committee a large number of letters from members of the association protesting in vigorous terms against the passage of the bill. These letters included a great variety of trades and demonstrated conclusively

the great interest which manufacturers at large are taking in the measure and the vigorous campaign which the association has set on foot to prevent the passage of the bill. The number and character of these communications evidently surprised the committee and refuted conclusively the statement so often made by the advocates of the bill that it was opposed only by a few manufacturers of iron and steel and by certain shipbuilding companies.

The public sessions of the committee closed on Friday, the 12th inst., with an interesting series of arguments for and against the bill, which were marked by great warmth on both sides and by many lively exchanges between the labor leaders and counsel for the manufacturers. The discussion was opened by Frank Morrison, secretary of the American Federation of Labor, who was followed by James Duncan, national secretary of the Granite Cutters' Union. Their arguments were substantially the same as those heretofore made before the House Committee. Judge J. K. McCammon then discussed the bill at length, devoting himself almost exclusively to its constitutional features. He quoted a large number of court decisions in support of his claim that the bill violated the Constitution, and he dwelt with special emphasis on recent decisions declaring unconstitutional the eight-hour labor laws enacted in the States of Illinois, Ohio and New York. Judge McCammon's argument was forcible and apparently made a deep impression on the committee, especially the quotations made from the opinions of the Ohio and New York Supreme Courts, the former court having declared the Ohio law invalid since the beginning of the present session of Congress.

Col. Hilary Herbert, ex-Secretary of the Navy, urged the committee to reject the bill on the ground that it was a form of paternalism and was socialistic in its tendencies and would undoubtedly be followed by other measures demanding the Government ownership of public utilities, &c. No measure could be brought forward that would be more of a menace to the great industries which have been built up in this country by manufacturers who have been permitted to manage their own business without governmental interference. The importation of foreign methods, he said, was un-American and in the end would injure the workmen even more than the employer.

Judge Payson took up the practical side of the bill, which, he argued, could not be enforced, and during the course of his remarks created a sensation by charging that the union machinists in the Newport News Shipbuilding Company's yard "in a movement instigated from Washington" had tied up the battle ship "Illinois" under threat of a refusal to permit her to sail on her trial trip until their demands were complied with. It was necessary, he said, for the company to tow the battle ship into midstream with tugs and to transfer to her more than 200 men from the cruiser "New York" in order that she might make her trial trip. "Such an act as that," exclaimed Judge Payson, with great warmth, "if a state of war had existed would have been punishable as misprision of treason! Men have lost their lives for less!"

James O'Connell, president of the International Machinists' Association, who followed Judge Payson, declared with a great show of anger that Judge Payson's statement that the movement referred to originated in Washington was false.

"How dare he make the assertion," he demanded, "that the officers of my association had anything to do with this act! That means me!"

Judge McCammon suggested that it was not necessary for Mr. O'Connell "to put on the shoe if it pinched," whereupon Mr. O'Connell turned his attention to Mr. Mull's statement concerning the transport "Thomas" and the battle ship "Alabama," which he said was untrue.

President Gompers of the American Federation of Labor closed the discussion with an argument in favor of the bill. Regarding Judge Payson's charge concerning the battle ship "Illinois," he said he had no informa-

tion, but did not believe it true. As to the "Thomas," he was informed "by the representative of a metropolitan newspaper" that Major Carson, who was in charge of the ship as the representative of the Quartermaster's Department, had stated that he knew nothing of the incident, "of which he would have been advised had it occurred."

Upon the conclusion of the argument Messrs. McCammon and Payson submitted a series of amendments to the bill, striking out the provision prohibiting an employee from working more than eight hours if he chose to do so and eliminating other objectionable features. If the amendments should be adopted the measure would be wholly unsatisfactory to the labor leaders, and there is no expectation that the modifications will be made. Chairman McComas is considering the advisability of providing an exemption for all manufacturers making "articles" such as are "usually purchased in the open market." The bill in its present form exempts only manufacturers of such "materials" as may usually be bought in open market.

W. L. C.

### A New Oil Testing Machine and Some of Its Results.\*

BY ALBERT KINGSBURY, PROFESSOR APPLIED MECHANICS, WORCESTER POLYTECHNIC.

As the result of computations from Tower's data, Reynolds found that the minimum thickness of the oil film and the difference of the radii of the brass and journal were 0.000375 and 0.00077 inch respectively, the load being 100 pounds per square inch and the diameter of the journal 4 inches. In 1899 the writer experimented with a journal 3.82 inches in diameter and 10 inches long, bearings and journal having exactly the same radius. The chords of the bearing surfaces were 3 inches each, the speed 80 and 190 revolutions per minute, and the journal was flooded with machinery oil. By measurement of the displacement of the bearings the oil film was found to have a mean thickness of from 0.00021 to 0.00023 inch under loads varying from 27 to 270 pounds per square inch.

A condition essential to the formation of such films, as shown by Reynolds, is that the rubbing surfaces should have a very slight inclination to each other in the direction of their relative motion. This condition is generally fulfilled by a slight difference in the radii of the journal and the bearing, due to the original looseness of fitting or to wear. When the loads are very great or the surfaces irregular, or when the conditions are otherwise such as to make the necessary inclination impossible, it is well known that the action of the lubricant is imperfect and frequently very defective. In such cases the theory of Reynolds, which so clearly accords with experiment for the conditions of perfect lubrication, becomes quite inapplicable; nor has any theory been formed which applies to these imperfect or extreme conditions. Such cases occur in pivots, where the surfaces are necessarily parallel, in cylindrical bearings which are too closely fitted, in any portion of any bearing surface where the pressure is unduly high, and in heavily loaded bearings generally. Under any of these circumstances the effect of the lubricant in reducing friction depends mainly upon the body or oiliness. The nature of this property, or combination of properties, is not well understood, but it appears probable that it is an intensified viscosity in that part of the fluid within the region of attraction of the surface molecules of the metal.

In any well fitted journal in which perfect lubrication exists the friction is determined by the speed, the pressure and the viscosity of the oil. Varying any one of these factors while keeping the others constant, there is some value of the variable for which the coefficient of friction is a minimum and which at the same time marks very nearly the limit of the variable for the condition of perfect lubrication.

In tests made on the machine illustrated the load

and the speed were kept constant, the viscosity of the oil being varied in each case by varying the temperature. For each of the three oils the minimum coefficient of friction is reached at a temperature of about 180 degrees F., with the given speed and pressure. As the temperature varies either way from this value the coefficient of friction increases; on the one hand increasing with the viscosity of the oil, the metallic surfaces being completely separated by a measurably thick film; on the other hand increasing because the decreased viscosity permits the surfaces to approach so that some parts of the nominal bearing areas are subjected to very intense pressures, up to the limits of strength or plasticity of the metals. It is in these localities that the body of the lubricant determines to some extent the friction and the wear of the journal, the viscosity being also effective on some parts of the area.

The relations of the coefficient of friction to the other variables may be stated as follows:

With increase of	Where the viscosity is effective, the coefficient of friction	Where the body is effective, the coefficient of friction
Pressure .....	Decreases.	Increases.
Speed .....	Increases.	Decreases.
Temperature .....	Decreases.	Increases.
Viscosity .....	Increases.	Decreases.
Body .....	.....	Decreases.

It is thus seen that the effects of body and of viscosity are in nearly all respects diametrically opposite, and that it must necessarily be very difficult to derive reliable information regarding the lubricating values of oils from friction tests in which the effects of viscosity and those of body are not separately recognizable. Under this consideration, methods of testing which are described in this paper are arranged with special reference to the conditions under which the effects of either property may be investigated independently of the effects of the other. The apparatus used is serviceable also for tests under any intermediate condition.

#### Description of Testing Machine.

The engraving shows the general appearance of the testing machine, for the frame and driving parts of which a 14-inch drilling machine was utilized. The test journal has its axis vertical; it is suspended from the spindle by means of a flexible coupling and runs between two opposed bearings in a cylindrical cup or case, which may be filled with the oil to be tested if a "bath" is desired. The load on the bearings is provided by means of a helical spring of 900 pounds capacity, with screw adjustment, and with a device for quick application or removal of the load without disturbing the adjustment. This spring is inclosed in a horizontal tube attached to the side of the oil case. The cup has a cover with a small hole for the insertion of a thermometer.

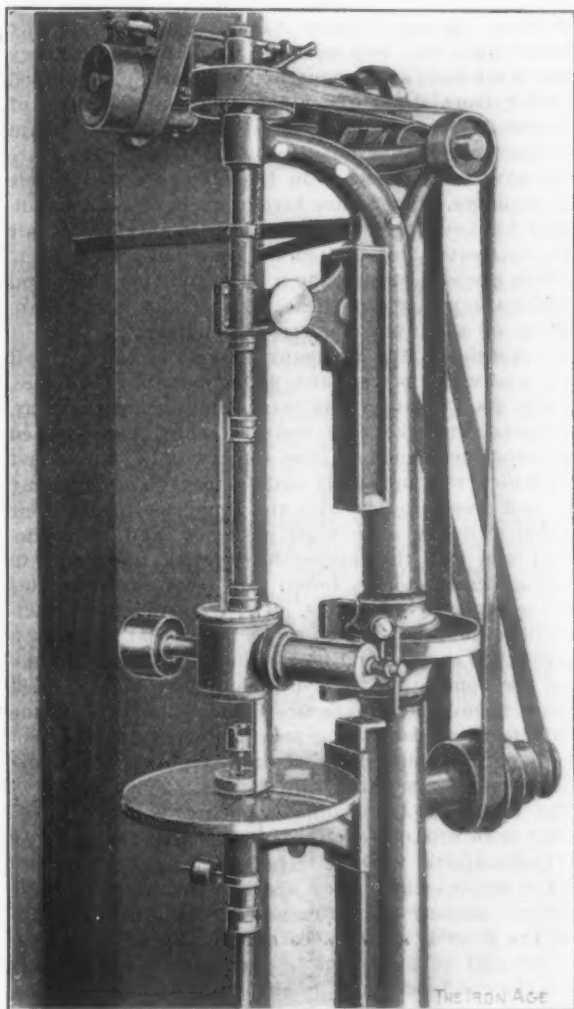
The cup and attached parts are borne on a hollow vertical spindle 1½ inches in diameter, turning freely in a sleeve supported from the frame of the machine; the spindle extends about 2 feet below the sleeve and is suspended from a fixed bracket by a tempered steel wire passing through the spindle to its lower end. In testing, these suspended parts turn freely to a position where the torsion of the suspension wire balances the friction at the test journal, and the angle of torsion, which may be as great as 270 degrees, is read from a graduated disk. The suspended parts being counterbalanced, there is no appreciable pressure of the spindle against its sleeve; and when the oil in this bearing becomes evenly distributed there is no error from friction, as has been amply proven by tests with an "optical lever" as well as by the uniformity of the results in use. At the same time, the viscosity of the oil serves the purpose of damping the oscillations which arise from variations in speed or friction at the test journal. This mode of suspension gives large indications for very small frictions at the test journal, while a helical spring placed on the extension of the spindle is added for tests involving great friction.

The cup and the test journal contained in it may be heated as desired by a Bunsen flame. The revolutions of the journal are indicated by a counting device, not shown in the figure.

\* Abstract of paper read at the New York meeting of the American Society of Mechanical Engineers.



For tests involving perfect lubrication (friction due to viscosity only) the test journal used is  $1\frac{1}{8}$  inches in diameter, of tool steel, hardened, ground and polished. The brasses are sectors cut from a ring finished in the lathe, each having an arc of about 120 degrees and a length of 2 inches. These brasses are fitted with some care, so that when perfectly clean they may be made to adhere to the journal after the manner of well fitted "surface plates." In making tests, care is taken to prevent wear of these parts, which are used only under such loads that the oil film effects complete separation of the surfaces and entirely prevents wear; the load is always relieved before starting or stopping the journal; and, finally, a friction device in the driving coupling safeguards the journal from motion against excessive



A NEW OIL TESTING MACHINE.

friction. These precautions against wear are necessary to insure the constancy of results.

It will be noted that the above conditions are not such as occur in practice; but it should also be noted that this method of testing is intended to show the effects of viscosity in lubricants and not the varying imperfection of any particular bearing surfaces subjected to wear.

#### Some Results.

The degree of certainty attained in the friction tests may be illustrated by the following values of the coefficient of friction found by the successive experimenters, no corrections being made for variations in speed nor for errors in calibration of the torsion wire:

Coefficients of Friction for Sperm Oil; Pressure, 340 Pounds Per Square Inch. 90 Degrees F.

117 R. P. M.	182 R. P. M.	281 R. P. M.
0.000906	0.001171	0.00146
0.000915	0.001158	0.00155
0.000886	0.001158	0.00151
0.000915	0.001125	.....

It may be noted that the lowest coefficients of friction shown are extremely small, and the writer believes them to be smaller than any hitherto recorded for lubrication maintained solely by the motion of the journal. The minimum friction is but one-fifth of that of the best ball bearing, as far as tests of the latter have been recorded. The value for the minimum coefficient for all oils tested on this journal has been found to be approximately 0.0006, whatever the speed, pressure and temperature by which the minimum coefficient may be determined; the oils varying from spindle to cylinder, the speeds from 42 to 101 feet per minute, the pressures up to 340 pounds per square inch and the temperatures up to 340 degrees F. Very nearly the same minimum coefficient was found in the writer's tests of a journal lubricated by air only; the value in which case was 0.00075.

For tests for comparing oils with respect to body or oiliness the best results have been obtained by the use of a hardened and polished steel journal  $\frac{1}{4}$  inch in diameter running between two brass bearings about 1 inch long; on this small journal pressures up to 8000 pounds per square inch may be applied if necessary. The samples of oil to be compared are contained in small brass cups placed inside the case and surrounding the test journal, each cup having a wire for transferring oil to a journal; the case, samples and journal are together heated to any desired temperature.

In testing, the oils are compared in pairs, being applied alternately at the upper end of the bearing, one being applied until the friction becomes constant, or nearly so; the other is then applied until it displaces the first, and again the friction becomes constant at the new value; this process is repeated several times. The oil giving the less friction is assumed to have the greater body. In this way the order of the body values of six samples of oils of the same class may generally be determined for any given temperature in an hour or less; the friction indications rapidly follow the changes of the oils and are generally quite consistent. When the oils to be compared are of different classes (as mineral oils with fixed oils) the first friction indications on changing oils are frequently misleading, and a longer time is required to insure certainty of results.

The speeds are made rather low and the pressures not unnecessarily high, in order to avoid heating and wear of the journal, since it is essential for comparative purposes that the surfaces should be in the same condition for both samples compared—a requisite which above all others led to the development of this method of testing. Again, the actual temperature of the oil at the test surfaces is shown more nearly by the thermometer if but little heating by friction be permitted. The writer has not found the order of body values, as determined by this method, to vary with the speed or the pressure within a considerable range. A speed of 50 to 100 revolutions (3 to 6 feet per minute), with sufficient pressure to make the coefficient of friction only as great as 0.01 to 0.03, have been found most satisfactory; the pressures being from 500 to 5000 pounds per square inch, according to the character of the oils.

The results of this method of testing for body agree thoroughly with the principal fact hitherto established with regard to body as distinguished from viscosity—namely, that the mineral oils as a class have much less body than the animal and vegetable oils. For example, in a body test of mineral oil and lard oil having viscosities 98.9 and 83.7 respectively, as determined by the Dudley pipette, the lard oil, although the less viscous, gives very decided evidence of greater body, by its much smaller friction. On the other hand certain cylinder oils, wholly or largely mineral, and exceeding lard oil greatly in viscosity, have also greater body than lard oil.

The method of testing readily indicates differences in body in samples of nominally the same oil from different manufacturers, such as lard oil; change of body in a given fixed oil on exposure to the air for some time; the addition of small proportions of mineral oil to animal or to vegetable oil, or *vice versa*.

The following tables of observations will serve to show the character of the numerical results of tests

made in this way, the oils compared being in the first case two samples of lard oil, and in the second case two engine oils; speed, 105 revolutions per minute (6.9 feet per minute):

*Body Tests of Winter Strained Lard Oils.*

Load, 300 pounds; pressure, 2550 pounds per square inch.			
Oil No.	Torsion. Degrees.	Coefficient of friction.	Temperature. Degrees F.
1	33	0.0233	72
2	25	0.0176	..
1	31	0.0218	..
2	24	0.0169	..
1	30.5	0.0215	..
2	23.5	0.0166	..
1	29.5	0.0208	..
2	23	0.0162	72

*Body Test of Engine Oils.*

Load, 200 pounds; pressure, 1700 pounds per square inch.			
29	11.5	0.0124	69
28	15	0.0161	69
29	11	0.0118	69
28	15	0.0161	69
Load, 100 pounds; pressure, 850 pounds per square inch.			
28	8.5	0.0182	120
29	4.0	0.0086	120
28	5.0	0.0107	120
29	3.5	0.0075	120

Thus, while the coefficient of friction is not always constant for any one oil, the one effecting the greater reduction of friction is readily distinguished, and hence is to be regarded as having the greater body. This appears to be the principal use which can be made of the numerical results, since the mean values of the coefficients of friction are not characteristic of the oils, but depend also upon the varying degree of roughness of the surfaces, the loads, the speeds, the temperatures and the kinds of metals forming the journal and the bearing. Nevertheless, great or small differences in the values of the coefficients of friction must be taken as indicating correspondingly great or small differences in body.

### Indianapolis Manufacturing Notes.

INDIANAPOLIS, IND., December 15, 1902.—The factories throughout the city and State are busy. Not all are running to their full capacity, but all are running and nowhere does there seem to be disappointment over the prevailing conditions. There is a little holiday slackness in some spots, but in others the height of activity. An unusual number of manufacturers have their factory products sold ahead for weeks or months; few can fill orders at once. There is unanimity in the wall over the paucity of and delays in getting raw material. The situation in this regard is getting easier, however. "When we wanted our raw material we used to have to go out and lasso the steel men," said a manufacturer; "now, occasionally, they come to see us." There is general complaint of car trouble. Many new concerns are starting up; old ones are expanding.

The New Castle Bridge Company will make their record this year, relatively speaking, for they will have operated only ten months of the year. They lost February and March in moving from New Castle to Indianapolis. At the beginning of the year they faced the necessity of turning away business or increasing their plant, or rather building a new and modern one. Indianapolis offered advantages that were lacking at the old location and the company in April began operations in a finely equipped brick building, 100 x 325 feet, at Singleton street and the Belt railroad. The capital stock was increased \$25,000, most of it taken by Indianapolis investors. Levi S. Pearson of Indianapolis became treasurer, the other officers remaining as follows: Thos. L. Campbell, president; Eugene Runyan, secretary and manager; J. E. Troyer, vice-president and chief engineer. The change of base put the company in touch with the growing traction interests, with the result that the greater part of the season's work has been on bridges for various interurban companies, among them the Indianapolis & Eastern, the Indianapolis & Lebanon, the Indianapolis & Plainfield, the Dayton & Troy and the Dayton, Covington & Piqua of Ohio, the work

running from 80-foot girders for the Indiana traction companies to 250-foot spans for the high truss bridges for the Ohio companies. This company also built the 265-foot bridge over the power canal for the Lake Superior Power Company at Sault Ste. Marie. In the structural department the company are now putting up the steel frame for the Big Four car shops at Urbana, Ill., and a \$40,000 four-story building for the McRoy Clay Works at Brazil, Ind. The company's output is about taken up to July, 1903.

Hetherington & Berner report a continuance of prosperity during 1902 and as promising a prospect for 1903. Their force of employees has never been larger. Structural iron is the standard product of the plant, but in recent years the firm have been making a specialty of asphalt plants. This season they built a complete railway plant for the Empire Asphalt Paving Company of Pittsburgh, Pa., and made an outfit for the refinery of the West Indies Company of New York. They filled an order from the Hoosier Construction Company of Indianapolis for an outfit for a bituminous macadam pavement manufactory at Huntington, Ind. They are ready now to fill a want in the way of small repair asphalt plants. Companies heretofore have been handicapped by having to use their large plants for repair work, no matter how limited the latter may have been. The firm are also introducing a plate splitting shear and a combination punching shear. A specialty is the manufacture of a 100 horse-power gas engine.

The Specialty Mfg. Company, makers of electric, belt power and water power fans, water motors, exhausters, &c., say good business has been done during the year, notwithstanding the cool weather which handicapped their chief department. The total will be up to last year, which was unusually satisfactory. The company have had great trouble with the foundries to get their material. Orders were filled piecemeal and goods delivered in a way that played havoc with the profits in operating the factory. Dozen lots from the foundries took the place of gross lots. The company find conditions little improved in this respect now that the season is here when they should be stocking up. While the demand for ventilating fans declined, there was a large increase in orders for exhausters and exhaust fans, due mainly to the growth of general industries. The company have just shipped one of their largest size exhaust fans, 96 inches, to Montreal, Canada.

The Standard Automobile Company, recently incorporated with \$100,000 capital, have secured the plant of the Indianapolis Wire & Mfg. Company, at 1143-47 Beecher street, where they are now testing their first machine. Among its differences from other automobiles, the chief is a two-piece axle, easily adjusted and removed and advantageous in the case of breakdowns where the chauffeur has to do his own repairing. A combination bearing is another feature. The company, early in the new year, will erect two brick buildings, 30 x 60 feet, one for the assembling room and paint shop and the other for show room. James H. Witty is treasurer and manager.

A new drop forge company are about ready for incorporation. Among those interested are F. P. Bates, for years superintendent of the Indianapolis Drop Forging Company; L. M. Harvey, ex-judge of the Marion County Superior Court; Senator Joseph R. Morgan, and Chas. F. Duval, real estate broker. The capital stock will be \$50,000. A plant will be built in the southeastern part of the city. Two large drop hammers have been contracted for and other machinery will be purchased. Temporary quarters have been leased in the plant of the Indiana Car & Mfg. Company.

John James Davies, 6a Calle de la Pila, No. 86, Durango, Mexico, announces that he has opened a bureau of information regarding Mexico, under the name of News Service and Commissions, whose facilities will be at the disposal of those who require expert aid in obtaining a Government concession, mining title, patent or trade-mark, commercial reports on firms or companies, the collection of accounts, &c.



## Notes from Mexico.

## The Currency Question.

DURANGO, December 8, 1902.—Shall Mexico continue to stand by silver as the basis of her currency, or shall she abandon it in favor of the metal which all the principal nations of the world have adopted as their standard of coinage? This is the burning question in Mexico today and one upon which competent business men, as well as prominent financiers, are divided.

However difficult of solution the problem may be, it cannot be said that the Government, which must ultimately settle it, lacks gratuitous advisers. The newspapers are full of interviews, in which leading public men, who are supposed to be better versed in the intricacies of the subject than the average citizen, exploit their views and tender their advice. It would appear that however "short" Mexico may be in the matter of a gold reserve to qualify the nation to take its stand upon a sound money foundation, the copious flow of financial wisdom running to waste in the press indicates that the republic possesses a surplus of fiscal experts.

The best and most succinct epitome of the situation is given in the current number of *Modern Mexico*, which publication shows that the two important factors in the problem to be solved are involved in the difficulty incidental to the acquisition of the gold necessary to place the finances upon a sound money basis, and the no less arduous task of retaining the gold in the country after it shall have been obtained. Both of these things are difficult of accomplishment for a country in the position of Mexico, which is a great producer of silver and at the same time a country whose imports far exceed her exports.

One fact is evident, however. The rise in the rate of exchange is not seriously felt by the people who consume imported products; those who do not consume them are utterly indifferent to the matter. Official figures clearly prove the first part of this assertion. The table below shows the duties collected upon imports for ten months of the present year, the differences in the totals for the corresponding months of 1901, and the mean rate of exchange:

Month, 1902.	Duties collected.	Difference. 1901.	Mean rate exchange.
January .....	\$2,224,663	*\$123,307	219
February .....	2,162,301	†314,883	223½
March .....	2,161,120	*14,156	225½
April .....	2,496,245	†512,517	233
May .....	2,461,959	†275,457	234½
June .....	2,439,596	†484,900	234
July .....	2,074,425	†253,690	238½
August .....	2,393,564	†420,006	242½
September .....	2,425,848	†401,272	246½
October (approx.) .....	2,600,000	†300,000	252

\* Decrease. † Increase.

While these figures do not prove that the silver currency system in vogue in Mexico is the best for the country, they do show that the nation thrives under it sufficiently to make the people indifferent to the addition of a few cents to the exchange rate.

## Industrial Notes.

The Monterey Iron & Steel Company have called their twelfth assessment of 5 per cent. on the capital stock, payable between December 1 and 15. The company's shares continue to be in good demand at and around \$100. It is asserted locally that this company will materially increase their capacity for steel making soon after the works start by the addition of a Bessemer plant at a cost of \$300,000. It is not believed that the present equipment by the open hearth process will be adequate for the requirements, hence the decision to increase the facilities. A second blast furnace may also be built. The plant of this company was dedicated with religious ceremonies a few days ago. An archbishop officiated.

The blast furnace at the works of the Mexican National Iron & Steel Company of Durango, after being out of blast some time, has recently been blown in, and

all the departments of the works are now actively in operation.

The New York Hardware Company, who have an office in the City of Mexico, have obtained a large contract for the supply of tools and material for the Monterey street railway, which is to be changed to electrical power.

An extensive deposit of asbestos was recently discovered in the State of Michoacan by the Director of the Medical Institute of Mexico while collecting botanical plants.

The State of Tabasco is now being exploited as a probable source from which a large supply of petroleum will be secured. Companies of large capitalization are being formed for the purpose of prospecting and drilling wells there.

J. J. D.

## One Union's Rule.

As an example of the kindly and beneficent way in which the labor union sometimes takes care of its members, says the *Bulletin* of the National Metal Trades Association, we herewith submit a set of rules recently passed by a certain pattern makers' association. These rules are submitted for the careful consideration of employers. Followed out to the logical development it will be seen that the pattern makers working under these rules are made absolute slaves to their business agent. They must do what he says in the matter of getting jobs. He has the power according to these rules to deal out the jobs to his favorites. If the union is strong enough to enforce these rules on their members and on their employers, either openly or secretly, any man falling into disfavor with the particular business agent can be brought to starvation. Truly a magnificent spectacle of the freedom of employment:

## Rules.

1. Any member being out of work shall report to the business agent at once and place his name in the out of work book.

2. Any member reporting himself out of work, and securing employment through the business agent or otherwise, and failing to notify the office by mail or in person, so that said notification is received not later than the first mail on the following morning, shall be fined.

3. Any member receiving notification from the office notifying him of any job, and failing to go after it and neglecting to notify the office within ten hours, shall be fined and also have his name taken from the list, and must sign again.

4. Members knowing of vacancies must immediately notify the office by the speediest means possible.

5. Any member who directly or indirectly gives such information as will secure employment for any pattern-maker who is not a member of this association shall be fined.

6. Any member answering ads. in the daily papers for pattern makers in the vicinity of this association shall be fined.

7. Members shall not seek employment from shop to shop if the business agent has no job. If the member desires to go to any certain shop that he thinks he can get employment, he must first notify the business agent and the business agent will inform him what wages to demand and the conditions of the shop. If the business agent requests the member not to seek employment in shops that he desires, he must comply with the request.

8. All ads. in the daily papers shall be answered by the business agent; if he fails to comply with the rules he is subject to a fine.

9. Shop captains shall examine cards of all members in his shop at least once a month. Any member failing to comply with this rule shall be fined.

10. All shops must have a shop captain. Members working in shops without a captain shall be fined.

11. Any member leaving a nine-hour shop to work in a ten-hour shop shall be fined, unless otherwise ordered by the Executive Board.

### Water Controlled Forter Reversing Valve.

The accompanying engravings illustrate a new style of reversing valve for regenerative furnaces, patented by S. Forter, manager of the Forter-Miller Engineering Company of Pittsburgh. The radical difference between this design and that of other reversing valves of either the water sealed type or valves with metal seats lies in the fact that the reversal of the flow of air or gas is not affected by the changing of the position of the movable parts inside the valve casing, but by the change of the water level in the compartments forming the water seal. These movable parts are always exposed to a very intense heat, which often causes them to warp or crack, which interferes with the proper operation of the valve and produces leakage. It is therefore very desirable to avoid all movable parts within the casing.

An examination of the illustrations will show that this object has been accomplished in this water con-

overflow valve, *l, m, n, o*, operated alternately in pairs by a reversing rod and operating lever, *r*. These valves are so shaped that air or gas cannot escape through them when they are open, as the water remaining in the elbow forms a seal. Fig. 4 shows this valve as constructed of cast iron. Here the four compartments are formed by cast iron pans resting independently in the cast iron base.

The water between the pans and the base is kept constantly at approximately the same level. This water keeps all parts always comparatively cool, and prevents them from cracking, which sudden and repeated changes of temperature would otherwise cause. The cast iron casing is likewise cooled by the water on top of it.

In Fig. 2 the manner of connecting the valve with the underground gas flue is shown. The mushroom valve, *M*, in the gas connection, serves as a cut off as well as a regulating valve. When this is closed the gas is shut off from the reversing valve, allowing it to

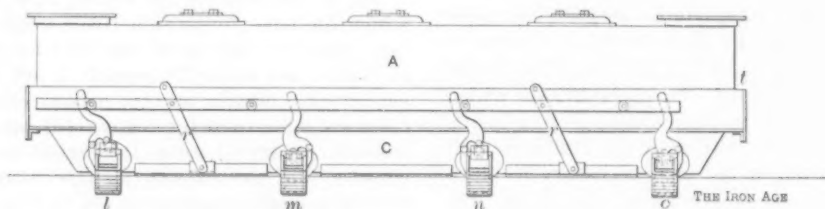


Fig. 1.—Side View.

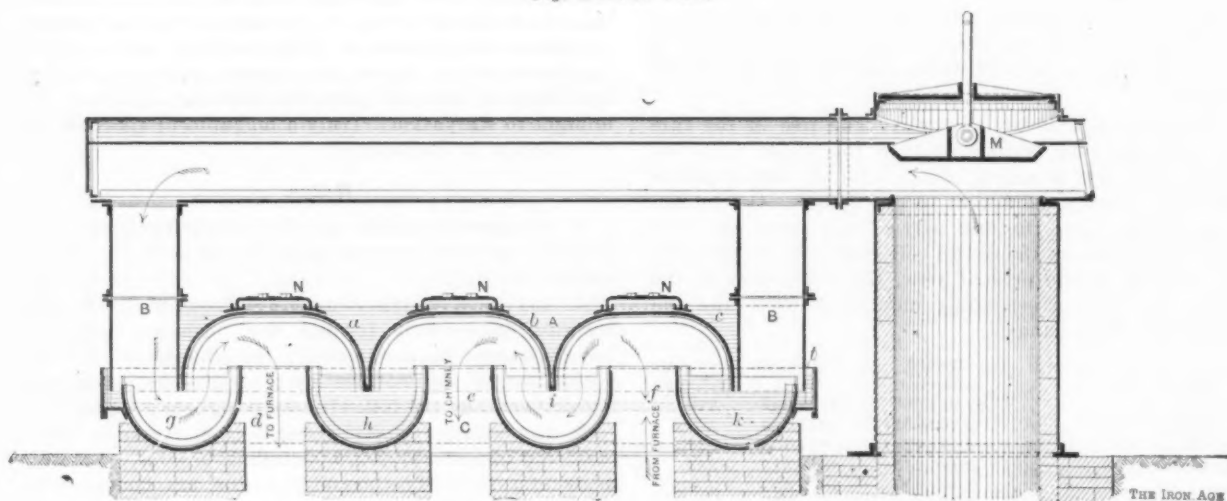


Fig. 2.—Longitudinal Section.—Wrought Iron Construction.

#### WATER CONTROLLED FORTER REVERSING VALVE.

trolled valve. Figs. 1 to 3 represent this valve as constructed of plates and angles. It consists in the main of a stationary casing, *A*, with inlets, *B*, for air or gas, resting on a water sealed base, *C*. This casing is provided with three hoods, *a, b* and *c*, which extend transversely through it and are riveted to its sides. The lower flanges of these hoods project downwardly below the upper edge of the base into compartments of the base and form a water seal when these compartments are filled with water. The flanges of the hoods rest on the side plates of the casing and the outer edge of the casing dips into the water trough of the base.

The base has three vertical passages, *d, e* and *f*, which correspond with openings in the brick work of the air and gas flues and the chimney flue of the furnace. Between these passages and at each end of the base four compartments, *g, h, i, k*, are arranged. On top the base has a water trough extending all around it, which, when filled with water, forms a seal with the casing.

The water, which is supplied through an open pipe provided with a cut off or regulating valve into the hollow spaces on top of the casing, flows over the top edge of the casing into this trough, and from there into the four compartments of the base. Each compartment of the base is provided at its lower end with an

be inspected or removed. The operation of this valve is as follows:

Supposing air or gas is to enter through the opening *d* of the valve into the left hand checker work of the furnace, and the waste gases to escape from right hand checker chamber through the opening *f* into the chimney flue. In this case the overflow valves *m* and *o* of the base are closed, and the other two, *l* and *n*, open. Consequently, the second and last compartments, *h* and *k*, are filled with water supplied from the trough, and a seal is formed with the respective flanges of the partition of the casing. The other compartments, *g* and *i*, are empty, as any water that should enter will flow away through the overflow valves. The operating lever, *r*, is then in its extreme left hand position, all as shown in Figs. 1 and 4.

If it is now desired to reverse, the operating lever *r* is brought to its vertical position for a very short time. The valves *l* and *n* of the first and third compartment will then close, the others, *m* and *o*, remaining closed. At the same time the regulating valve of the water supply pipe is opened full to allow the first and third compartments to fill quickly with water, and seal with the respective flanges of the partition of the casing. The furnace is now completely cut off from the air or



gas inlet and from the chimney flue, and no gas can possibly enter the chimney flue during the operation of reversing.

When the first and third compartments are filled (which, with a liberal supply of water, will only require a fraction of a minute), the operating lever *r* is thrown in the extreme right hand position, opening the overflow valves *m* and *o* of the second and last compartment. This will allow the water in them to flow away, and reverses the current of air or gas. At the same time all soot or tar that may have accumulated in these compartments during the interval between reversal is washed away automatically.

After the reversal the cut off or regulating valve of the water supply pipe is preferably closed almost completely, so as to supply only enough water to replace the small amount that may evaporate or leak through the overflow valves. This can be done automatically by connecting the operating lever with the regulating valve in the water supply pipe.

It will be seen that this valve shares with other

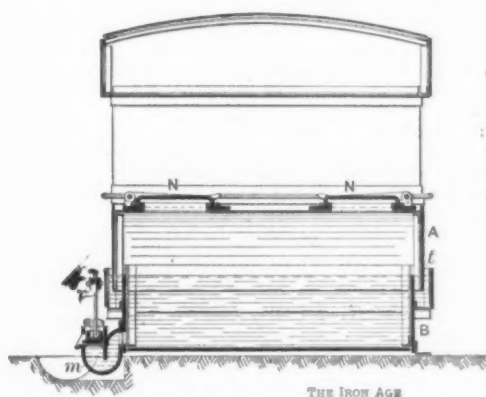


Fig. 3.—Cross Section.—Wrought Iron Construction.

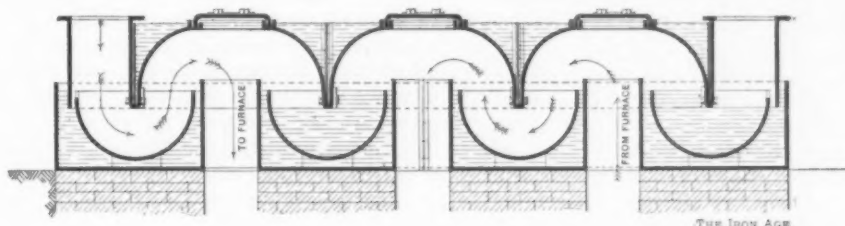


Fig. 4.—Longitudinal Section.—Cast Iron Construction.

#### WATER CONTROLLED FORTER REVERSING VALVE.

water sealed valves the advantage of being absolutely tight, and has in addition to this the feature of dispensing with all movable parts whatever within its casing, where they are exposed to intense heat. Should any part of the valve warp in consequence of careless handling or excessive heat the operation of the valve will not be interfered with in any manner.

During the operation of reversing the gas can at no time enter the chimney flue, as the furnace and chimney are completely cut off from the gas supply before the reversing.

It is well known that on other reversing valves that part of the valve which effects the reversing passes during this operation through a position relative to the flue openings which permits the gas to enter direct from the valve into the chimney flue and to be entirely lost or wasted. The amount of this loss depends on the size of the valve as well as on the length of time spent in the operation of reversing. This time may be assumed to be 15 seconds in the average. It is probably less in small valves, but will exceed this in the large sizes, which are generally reversed by hydraulic cylinders.

In good open hearth furnace practice the furnace is reversed at least four times every hour. This would

make the interval in which the gas escapes into the chimney flue 60 seconds or 1 2-3 per cent. of an hour. It must further be taken into consideration that during the time in which the gas enters the furnace it encounters a pressure in the flues to be overcome, whereas when it is in direct connection with the chimney flue it is drawn into the chimney by a vacuum.

It may therefore safely be assumed that the gas will enter the chimney flue at at least double the speed at which it enters the furnace, or, in other words, that during the same length of time at least double the amount of gas will pass through the valve into the chimney. This would make the loss of gas about 3½ per cent. of the whole amount used.

Take the case of a 50-ton open hearth furnace making 15 heats a week, or 750 heats a year of 50 weeks. This furnace would produce 37,500 tons of steel a year with a coal consumption of about 13,000 tons. A saving of 3½ per cent. on 13,000 tons would be 455 tons, or, assuming the cost of the coal at \$2 per ton, a saving of \$910 a year. This saving would more than pay for the cost of the valve in one year. Another advantage of this valve lies in the fact that it is self cleaning, the soot and tar being washed out at each reversal. The operation of reversing requires very little power, allowing even the largest valve to be easily reversed by hand; no hydraulic or other power device being required. The valve is very simple in design, and the interior is easily accessible through manholes, *H*, on top of the casing, which at the same time serve as explosion doors.

#### Labor in Lorraine.

The last annual report of one of the famous large new steel plants of Lorraine, the Hauts-Fourneaux Lorrains Aumetz-La Palix, contains some interesting figures on the earnings of labor. In the Aumetz iron mines the average daily wages of the men were 5.99 francs in the

fiscal year 1901-1902, as compared with 5.79 francs in 1900-1901. At the Friede mines the figures were 5.74 and 6.04 francs respectively, the tonnage per man per day being 4.59 and 4.72 tons. In the steel works and rolling mills, which produced 171,116 tons of ingots in 1901-1902 and 127,368 tons in 1900-1901, there were employed 1288 and 931 men respectively. In 1901-1902 the mills rolled 149,503 tons, 28.2 per cent. in the form of blooms, 46.5 per cent. of billets, and 25.3 per cent. of shapes, bars and rails and sleepers. The average wages per day were 5 francs, or a shade less than \$1, in 1901-1902, as compared with 5.35 francs in 1900-1901. The blast furnaces produced 106,754 tons in 1901-1902 and employed 410 men, whose average wages were 4.62 francs, or 91 cents per day.

The Salem Leather Company, Salem, Mass., are bringing to the attention of manufacturers the use of leather for tumbling purposes. They are marketing it in four different kinds, sheep, goat, sole leather and skivings, varying in lengths from 1 to 12 inches and averaging 1 inch in width. It is stated to be particularly well adapted for tumbling any light metal article, and being dry and free from oil makes a good absorbent for oily work.

## Notes from Great Britain.

### The British Iron Market.

LONDON, December 5, 1902.—As I anticipated, the wages ascertainment announced last week has created a stir, particularly in the Midlands. Inasmuch as trade was palpably in a depressed condition, it certainly seemed strange that prices should be announced showing an upward tendency. It becomes a question whether the findings of price in the 12 selected firms can be regarded as equitably representative. The smaller ironmasters are not backward in condemning the operations of the board as possessing on the whole more a political than a strictly economic importance. It is naturally to the interest of the large ironmasters as far as possible to avoid difficulties with the men. It is to the men's interest that prices should be kept up, and accordingly, say the grumblers, the largest firm of marked bar makers is one of the "selected." As this firm obtains £8 10s. per ton, and has an enormous output, it is not surprising that men whose products are much more competitive should object to the wages they pay being governed by conditions which have clearly no direct relation to the actual facts of the market. An ironmaster thus states his objections, but I must not be taken as indorsing the opinions he expresses. I quote him none the less, because it is always important to observe if any disposition be manifested to break away from trade associations of any sort. He says:

The Wages Board does not represent the real state of things, and its declarations afford no guide to purchasers or the general public, and therefore serve a mischievous purpose. It cannot be contended that the whole of the bar output of the Wages Board, aggregating about 200 tons per week for each firm, bears any analogy to the whole. Is there a member of the Wages Board—perhaps excepting the chairman—who can get to-day £6 10s. per ton at works for any decent specification, and is it not nearer the mark to say he will have the greatest difficulty in obtaining £6 10s. delivered?

Foreign competition does not touch best classes of iron and specialties; but it is the ordinary stuff you have to cater for, something which everybody uses every day, and if our wages were 25 to 30 per cent. less, as they ought to be, we could get to closer quarters with the protected foreigners. The trade, putting the case fairly and not in the optimistic language of the Wages Board, was seldom if ever worse. Decent lines, if secured at all, have to be taken at prices which represent a serious loss. The result is makers are frightened to take orders and, as has been done in several cases, prefer to close their works altogether.

But whatever may be the present condition of the market we are not without our optimists. Thus we have J. Stephen Jeans, secretary of the British Iron Trade Association, who in a lecture delivered to the Birmingham University this week speaks almost hopefully of the British iron market conditions. On the question of natural resources he told the students that the future of the British iron industry would greatly depend on the extent to which it could command cheap and abundant raw materials in the form of ores and fuel. Mr. Jeans however has his reservations, and one of these forebodes evil things for South Staffordshire. He said that all other things being equal, the manufacturing district that lay near to the sea and close to important coal fields had the greatest opportunity of doing an important business. Cleveland, South Wales and Scotland had these advantages, but in this unfortunate district railway charges went far to kill the iron industry. It had long been prophesied that the finished iron industry was destined to be extinguished, but general prophesying of that kind was not entitled to much consideration. Still there had been a great decrease.

### A New Deposit in Spain.

As having a direct bearing upon the possibility of British ironmasters securing raw material at a cheap price, the *Revista Minera* of November 1 contains a description of a new and extensive deposit of iron ore in Spain. It is situated at Almohaja in Teruel, and is the property of a Bilbao firm. The ore is hematite, averaging 54.34 per cent. of iron, 1.95 per cent. of manganese, 0.06 to 0.39 per cent. of phosphorus and 0.01 to 0.03 per cent. of sulphur. The deposit is estimated to contain 33,000,000 tons of ore of superior quality, and 16,000,000 tons of siliceous ore. One is constantly hear-

ing of new deposits in Spain which somehow never seem to materialize, but the *Revista Minera* has a reputation to maintain.

### A Big Tube Combine.

Some time ago there were strong rumors to the effect that the great wrought iron tube manufacturers, Lloyd & Lloyd, Limited, of Birmingham, and A. & J. Stewart & Menzies, Limited, of Glasgow, were about to amalgamate. The statements at the time were contradicted by both firms, but there is no smoke without fire, and now we can see the blaze. On December 2 both firms sent out circulars to the shareholders announcing the amalgamation. The combine is effected by the issue of cumulative preference and ordinary shares and debentures or debenture stock of Stewart & Menzies to Lloyd & Lloyd, against the transfer of the undertaking and assets of Lloyd & Lloyd, the new concern to be known as Stewarts & Lloyds, Limited. The secretary of Lloyd & Lloyd, in a letter to his shareholders, says, *inter alia*:

The amalgamation has been determined upon after a negotiation in which every care has been taken to preserve the rights of both classes of your shares. It will give for every £10 fully paid 5 per cent. preference share in Lloyd & Lloyd, Limited, one £10 5 per cent. fully paid cumulative preference share in the capital of Stewarts & Lloyds, Limited. The debenture stockholders in Lloyd & Lloyd, Limited, will be offered at their option an equivalent of their present holding in debentures or debenture stock in Stewarts & Lloyds, or cash with 5 per cent. premium and interest to date of repayment. On the completion of the arrangements the share capital of Stewarts & Lloyds, Limited, will be £1,400,000, divided into 55,000 6 per cent. cumulative preference shares of £10 each, fully paid, and 85,000 ordinary shares of £10 each, fully paid.

Lloyd & Lloyd were registered in May, 1898. All the preference shares, £252,000 of the ordinary, and £121,000 of the debenture stock, have been issued and paid up. All the ordinary shares, £84,150 of the preference, and £68,500 of the debenture stocks, were issued to the vendors and their friends. A. & J. Stewart & Menzies first consisted of four amalgamated firms in or near Glasgow, which early in 1898 combined with James Menzies & Co. All the capital has been issued and paid up. There are borrowing powers for £250,000, which have been exercised to the extent of £200,000 by the issue of 3½ per cent. debentures. To June 30, 1899, 10 per cent. per annum was paid on the ordinary shares, and for the succeeding years to 1900 the dividends were 15, 9, 7½, 6 3, 7 and 10 per cent., respectively, the last figure standing unaltered for three years. The reserve fund amounts to £200,000. The new combine will have an output of about 50 per cent. of the total output of iron and steel tubes in Great Britain, and will be the largest producer of tubes in the world with the exception of the United States Steel Corporation. The number of employees is about 8000 and the staff consists of about 450 clerks. Altogether this is one of the biggest things in the way of amalgamation that has recently taken place in this country.

### Unrest in the European Iron Market.

Most of us have been hoping that when at the end of last year the tension of the iron trade crisis in Germany had been relieved, we should hear of a gradually improving market. Unfortunately events point to a renewed stringency. Reports are to the effect that at the close of the year heavy failures in the iron, steel and kindred trades in Germany may be expected. Owing to the condition of the money market, the banks holding large loans and notes to the debit of the various firms have already given notice to call them in. An attempt is being made to renegotiate these loans in London, but without much success. Color is lent to these rumors by the memorial recently presented to the German Imperial Chancellor by the Commercial Treaties Association. This association has been in existence for two years and numbers 17,000 members, who conjointly give employment to 1,500,000 persons, on the earnings of whom, it is estimated that 3,500,000 persons depend, so that the association may actually be said to represent the economic interests of 5,000,000 persons. In speaking of the present condition of Germany the memorialists say:



For two and a half years the whole economic life of Germany has been in a condition which bears the character of a crisis. . . . A satisfactory state of things will not be restored until the element of stability and security has been introduced into our commercial relations with foreign countries. For, notwithstanding the considerable export trade which is still conducted under the protection of the existing treaties of commerce, German industry in its most productive branches is suffering from want of employment in a high degree, from widespread want of work for those whom it employs and from reduction of wages. The spirit of enterprise is practically extinct, new plant is hardly anywhere being acquired, and manufacturing premises are hardly anywhere being extended. Moreover, the efforts of employers at least to keep their works going have resulted, especially in the case of syndicated industries, in the exportation of large portions of their productions at unprecedentedly low prices, a procedure which, if it were to last much longer, must inflict the gravest damage upon the German economic body and entail consequences which would exercise a prejudicial influence for decades. The present melancholy situation has therefore a significance which is not merely transitory, but which is of decisive importance for the whole future of Germany as a world power.

It seems clear, therefore, that Germany is commercially in a bad way.

Turning now to Russia, it will be within the recollection of readers of *The Iron Age* that I announced a conference of representatives of the iron industry, which was to be held at St. Petersburg on October 2. This conference was attended by over 100 delegates, the president being W. de Kovalevsky, Assistant Minister of Finance. In the interchange of opinion between the delegates it was clearly proved that there is a crisis overshadowing the metallurgical industry, and that so far from this crisis being past it assumes a gloomier character. Representatives of the Southern and Ural Works insisted on curtailment of production as the only radical and effective remedy, and on the necessity of combined organization, adding that a beginning in this direction had just been made by the formation of a combination for the sale of metals and regulation of prices, but that, unfortunately, only a very few works had signified their adherence. Other representatives dwelt on the question of State orders, the necessity of augmenting the same, and on "the abnormal and extremely onerous arrangements connected with the conclusion and fulfillment of Government contracts." Foreign works obtain, it was complained, Russian Government orders on the usual trade conditions prevailing abroad, and instead of having to deposit securities are even favored with advances. The meeting unanimously recognized the necessity of a revision of the Government regulations affecting State orders, W. de Kovalevsky requesting the representatives present to draw up a special report on the subject for the consideration of the Government.

#### Welsh Tin Plate Trade.

At a meeting of the South Wales and Monmouthshire Tin Plate Manufacturers' Association at Swansea, on December 4, the question of restricting manufacture was again considered. In response to an invitation from the association many employers outside the organization also attended. Eventually, in accordance with an agreement previously made between the associated employers and representatives of the different workmen's unions, it was unanimously resolved to cease operations for a week in December, January, February and March. The first stoppage will take place at the end of the present month. The decision is due to an accumulation of stocks resulting more from increased manufacture than from a decrease in the demand for Welsh tin plate.

#### The British Westinghouse.

For the year ended July 31, the British Westinghouse Electric Mfg. Company declare profits amounting to £79,594. Out of this an interim dividend of £23,257, and debenture interest to the amount of £6132 have been paid; £30,000 is now appropriated, making a full 6 per cent. of preference shares. Of £20,204 remaining, £14,963 has been written off for stamp duties and fees incurred in the formation of the company and the expenses connected with debenture issue, leaving a balance of £5240, which is placed to reserve fund. The growth of the business of the company is indicated in

these figures: Orders received during the year ended July 31, 1899, £279,000; 1900, £547,000; 1901, £738,000; 1902, £932,000. For the first four months of this year, that is since July 31, orders received have exceeded £825,000. This rapid growth of the company's business necessitates an increase of capital and an additional £200,000, 6 per cent. preference shares of £5 each will be created, one-half of such shares to be issued at once.

#### New Ships to Other Nations.

The output of new ships to other nations during the month of November shows the growing depression in the shipbuilding industry. I give the usual month's details as under, comprising the ship's name, port at which built, destination, flag and gross tonnage.

	Tons.
"Coeyanna," Hebburn-on-Tyne, Melbourne, British....	3,921.76
"Gregory Apcar," Belfast, Calcutta, British.....	4,562.00
"Kapiti," Paisley, Wellington, N. Z., British.....	208.63
"Nord I," Middlesbrough, Helsingfors, Finnish.....	1,379.24
"Phu-Yen," Stockton-on-Tees, Dunkirk, French.....	1,971.39
"San Isidore," Grangemouth, Carthage, Uruguayan....	1,537.32
"Twingone," Newcastle-on-Tyne, Rangoon, British....	1,770.71
"Terje Viken," Newcastle-on-Tyne, Sydney, Cape Breton, Norwegian .....	3,611.59

S. G. H.

#### The German Private Export Premium System.

The *Board of Trade Journal*, edited by the commercial department of the Board of Trade of Great Britain, publishes the following memorandum on the system of German private export bounties:

As the price policy carried on by the syndicates and in fact the whole interior working of all such institutions is never laid before the public in an authoritative form, it would be exceedingly difficult, if not impossible, to furnish a complete statement. The information, such as it is, is generally obtained from second or third hand sources, which would account for possible discrepancies of various reports.

The export bonus system was introduced in 1897 for such goods the exportation of which could be proved beyond doubt by the production of bills of lading, invoices, &c. The bonus was granted by the Coal, Raw Iron and Half-Finished Goods syndicates, with a partial co-operation on the part of the Coke Syndicate. The rate, which was fixed at 15 marks per ton net of the exported goods, was however, only granted upon a portion of the quantities (viz., on 66 2-3, 50 per cent., or even 33 1-3 per cent.) of the raw material got from the syndicates. Works the production of which went partially or almost entirely abroad had to submit to a reduction of the export premium, whereas the works with a smaller export were granted the full bonus. In some branches, it is true, the rate of percentage benefited the entire consumption of all their works. In such cases the unions apportioned the amounts among themselves, and it was left to the supported union to distribute among its members the respective amounts of the export bonus. In principle the bonus was only to be paid to unions which offered a guarantee that by these premiums the world's market price would not be lowered below the limits established by foreign competition. The commercial high tide, however, diminished the importance of these bonifications because the prices in the world's market went up and rose in 1898-9 partially above the inland selling prices. With the turning tide new efforts were made to establish the export bonifications on a firmer and more lasting basis, the more so as the works had been forced during the boom to enter into contracts with the syndicates which extended over long periods. They found themselves compelled to take up and work off raw material prematurely contracted for at high prices, although the prices for manufactured goods were very low and contracts even at those low prices were scarce. Under these circumstances the world's market alone was left them to rid themselves of the accumulating stock. The German statistics show that henceforward the export, more especially of iron goods, was most energetically pushed. This, of course, swelled the demands for export premiums, and recently a new arrangement with regard to the export bonus has been perfected after prolonged and delicate negotiations. The Rhenish-Westphalian Coal Syndicate, in connection with the West-

phalian Syndicate, the Raw Iron Syndicate, at Düsseldorf, the Half-Finished Goods Union and the German Girders Union, on June 20 established at Düsseldorf a central office under the style of "Clearing House for Export." This office is empowered to settle the amounts of the export premiums for the above mentioned syndicates and their members. All requests for grants of bonifications must be addressed to their office; here the declared exports are controlled as to their accuracy; here, furthermore, accounts and calculations are settled and the respective payments of bonus are effected. The amount of the bonifications is to be fixed quarterly. For the second quarter it was granted retrospectively to April 1 at the following rates: 1.50 marks per ton of such coal and coke as is used for the manufacture of export goods; coal is calculated to yield 70 per cent. of coke; furthermore, 2.50 marks for the ton of raw iron, exclusive of the bonus upon coal; furthermore, 10 marks per ton half-finished goods and 10 marks per ton girders, both inclusive of the bonus granted on coal and raw iron.

The export premium must, as a rule, not exceed the difference between foreign and inland prices; the central office furthermore retains 1 per cent. of the premiums to cover working expenses.

It is reported that it was one of the facts resulting from the policy of the central office which comprises the most important unions of the iron industry that the puddling works, which are in litigation with the blast furnaces, and which up to then had bought their raw iron from nonsyndicated works, again find themselves forced to purchase from the syndicate in order to obtain the export bonification, because the purchases on the free market now no longer offered sufficient advantages.

There also exists an export union for rails, to which the largest of the German rail manufacturing works belong. This union has likewise organized a central office, and it intends to attempt an understanding between the works belonging to the Export Union and the respective foreign manufacturers in the case of every new contract.

This, however, does not complete the list of export bonifications.

The Wire Syndicate in its by-laws professes that its main object is to promote the export by granting premiums.

The Union of Sheet Iron Manufacturers pays an export premium of 15 marks per ton.

### The Traveling Feed Table Patents.

The recent decision favorable to the plaintiffs in the suit of John Brislin and Antoine Vinnac against the Carnegie Steel Company for the alleged infringement of a patent for a traveling feed table used in structural mills has resulted in another suit being entered in the United States Circuit Court at Pittsburgh last week against Jones & Laughlins, Limited, and the Jones & Laughlin Steel Company by John Brislin and William Wessel, administrator of Antoine Vinnac, deceased.

The patents on which the plaintiffs base their claims expire in July, 1903, but before that time numerous suits are to be entered against firms throughout the country, charging infringement of the same patent. An immense sum of money is involved, as the device is in general use in the manufacture of structural steel, and represents one of the most notable of improvements to facilitate the rolling of steel. The suits entered are similar in character to that entered against the Carnegie Steel Company in 1897, and which was decided in favor of the plaintiffs several months ago, and which has since been appealed to the United States Circuit Court of Appeals by the defendant company. The appeal will be argued in Philadelphia next March.

The bill filed against Jones & Laughlins Company, Limited, and the Jones & Laughlin Steel Company, alleges the defendant companies have infringed and are still infringing on patents of the plaintiffs, granted on July 20 and November 16, 1886. Patrick F. Hanley and Francis M. Richey are mentioned in connection with

the granting of the patents. The device in question is used in introducing beams and channels in the process of making, into the rolls, and also receiving them as they come from the rolls, one of the machines being on either side of the rolls. This operation facilitates the manufacture to a great extent, one man doing the work formerly done by seven or eight, and with greater speed and in a more positive manner.

### The New Iron and Steel Freight Rates.

The average increase in freight rates on iron and steel products to go into effect on January 1, 1903, is 10 per cent. The official tariffs have not yet been issued by the railroads, but will probably be sent out this week. The new rates on pig iron, billets, pipe iron, ferromanganese, wire rods, sheet and tin plate bars and chain iron from Pittsburgh, and points taking Pittsburgh rates, in gross tons of 2240 pounds in carloads, are as follows:

From Pittsburgh to—	Pig Iron.	Billets.
New York City.....	\$2.40	\$2.60
Philadelphia.....	2.20	2.40
Baltimore, Md.....	2.10	2.30
Rochester, N. Y.....	1.70	1.90
Syracuse, N. Y.....	2.00	2.20
Cleveland, Ohio.....	1.40	1.40
Columbus, Ohio.....	1.70	1.85
Dayton, Ohio.....	2.05	2.20
East St. Louis, Ill.....	3.30	3.60
Evansville, Ind.....	3.10	3.40
Indianapolis, Ind.....	2.35	2.55
Louisville, Ky.....	2.70	3.00
Mansfield, Ohio.....	1.60	1.75
Muncie, Ind.....	2.35	2.55
Peoria, Ill.....	3.10	3.30
Terre Haute, Ind.....	2.70	3.00
Zanesville, Ohio.....	1.40	1.40
Chicago, Ill.....	2.70	3.00
Boston, Mass.....	2.80	3.00
Youngstown, Ohio.....	.85	.95
Buffalo, N. Y.....	1.65	1.70
Utica, N. Y.....	2.20	2.40

It should be noted that the rates on ferromanganese, wire rods, sheet and tin plate bars and chain iron are the same as on billets.

Articles of iron and steel manufacture will, as heretofore, take fifth class rates on less than carloads and sixth class rates on carloads. The new rates on articles of iron and steel manufacture from Pittsburgh and points taking Pittsburgh rates, in carloads and less than carloads, effective January 1, 1903, to points named below, will be as follows:

From Pittsburgh to—	Car loads. Cents.	Less car loads. Cents.
New York City.....	14½	17½
Philadelphia, Pa.....	13½	16½
Baltimore, Md.....	13	16
Rochester, N. Y.....	10½	12½
Syracuse, N. Y.....	12	14½
Boston, Mass.....	16½	20
Buffalo, N. Y.....	10	12
Cleveland, Ohio.....	9½	11
Columbus, Ohio.....	10½	13
Dayton, Ohio.....	12	15½
Youngstown, Ohio.....	4½	5½
East St. Louis, Ill.....	20½	24½
Evansville, Ind.....	18½	22½
Indianapolis, Ind.....	15½	18½
Louisville, Ky.....	16½	20
Mansfield, Ohio.....	10	12½
Muncie, Ind.....	14½	17
Peoria, Ill.....	18½	22½
Terre Haute, Ind.....	16½	20
Zanesville, Ohio.....	10	12
Chicago, Ill.....	16½	20
Boston, Mass.....	16½	20
Utica, N. Y.....	13½	16

The American Iron and Steel Association, 261 South Fourth street, Philadelphia, are distributing in pamphlet form a reprint from the *North American Review* of the article "What Shall We Do With the Tariff," by the late Thomas B. Reed, formerly Speaker of the House of Representatives. This article is not only an exceedingly valuable contribution to the current discussion of the tariff issue, but is more than ordinarily interesting in view of the fact that it is the last published deliverance of the lamented statesman.



### The Niles 100-Ton Electric Traveling Crane.

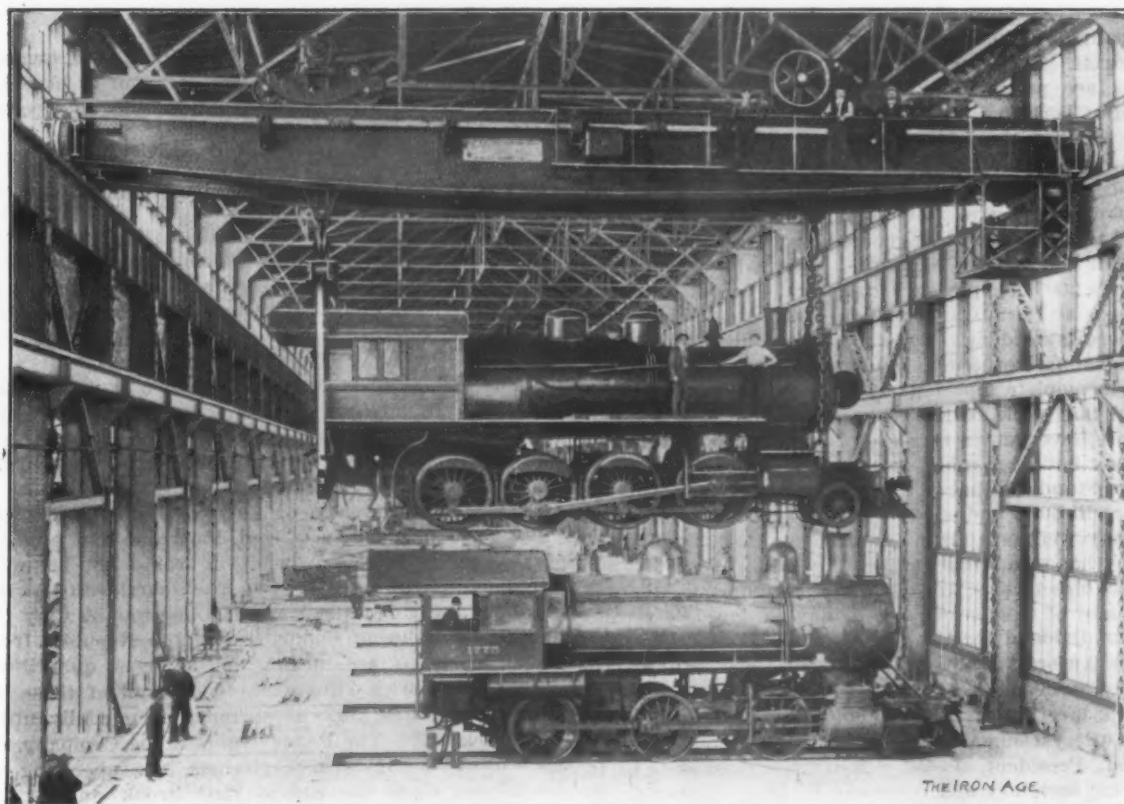
The 100-ton five-motor electric traveling crane recently installed by the Niles-Bement-Pond Company, 136 Liberty street, New York, at the Collingwood shops of the Lake Shore & Michigan Southern Railway is of particular interest. In the accompanying photograph this crane is shown lifting an 80-ton eight-coupled consolidation type locomotive. The crane is of the Niles standard design fitted with two 50-ton trolleys. The main hoist motors are each of 45 horse-power and are capable of hoisting the full load at a speed of about 10 feet per minute.

The bridge motors traverse the bridge up and down the shop, which is 530 feet long, at the rate of 150 feet per minute with the full load and 200 feet per minute with light load. The bridge has a span of 65 feet 6 inches, is of the box girder construction used on all this

### The Price of Manufacturing Greatness.

NIAGARA FALLS, N. Y., December 15, 1902.—A case that is of vital interest to the future of Niagara Falls as a manufacturing center has been before the equity term of the Supreme Court in Lockport, N. Y. The case is that of Mary Wattengel vs. the Acker Process Company, and in it the plaintiff seeks damages for alleged damage to her property by chlorine gas said to have escaped from the factory of the defending company. Much interest centers in the case, because the action is one of nine to come before the court on similar complaints.

The plant of the Acker Process Company is located on the lands of the Niagara Falls Hydraulic Power & Mfg. Company, to the west side of the city. While the land about the factory was platted and actually donated as the original manufacturing center of Niagara



THE NILES 100-TON ELECTRIC TRAVELING CRANE.

company's cranes, and is fitted with eight truck wheels running in heavy steel truck frames, which are securely riveted to the box girders. All the gears are cut from the solid and run submerged in oil. Each trolley is equipped with an improved automatic safety mechanical brake, which controls the load at all times, and also an electric brake mounted on the armature shaft which is "on" when the current is thrown off. The motors are designed especially for crane work and are wound for 220 volts direct current. Each motor has its reversible controller and rheostat.

The daily papers have recently contained flamboyant articles giving much detailed information relative to great developments in the Southwest. These developments include alleged operations to be conducted by the Southwestern Fuel & Iron Company. The statement is made that many millions of dollars will be invested in new railroad lines, as well as a great iron and steel enterprise, under the name of the company mentioned. The articles apparently bore the stamp of authenticity, but we are advised by some of the parties whose names are given in connection with the scheme that the whole project is visionary.

Falls in 1852, when the canal power was first projected, a residence section has grown upon the property and owners of some of these homes now seek redress for alleged damages.

The case is of much general interest, because whatever the decision of the court may be, it will necessarily apply to the majority of the new industries that have located at Niagara, also to others that may contemplate locating there. It is clearly evident that Niagara Falls is destined to grow as an electro-chemical center, and in such development it would not be remarkable, considering the variety of processes and the experiments which will necessarily be conducted, if various gases be released in the atmosphere. Such gases as chlorine quickly make their presence known, and, of course, the majority of odors of this kind are distasteful, but it remains to be seen to what extent the court will determine they are injurious to health and property. It would be remarkable if Niagara Falls could attain the future its people have mapped out for it along electro-chemical lines and not have its atmosphere, to some degree, tainted by the gases of the great plants that will certainly and surely make it the electro-chemical center of not only the United States, but of the world.

## Central Pennsylvania Industrial News.

HARRISBURG, PA., December 13, 1902.—Nearly every mill in this section of the State reports record breaking outputs for the week. For the first time for months all of the big steel plants were in full operation. The situation was improved further by the blowing in of several furnaces that have been closed for weeks on account of lack of fuel. At Steelton the record for production was broken on Monday by the turning out during 24 hours of 1278 tons of ingots by the Bessemer department. Shipments for the week were slow, the car supply being inadequate to meet the demands. Rails that should have been shipped early last week are now being loaded. Incoming material is not arriving in desirable quantities, iron being short and fuel being consumed as soon as it arrives. Any serious freight blockade at this time will have unfavorable results at Steelton.

The Central Iron & Steel Company were busy this week on rush orders for the Pennsylvania Railroad Company and filled large orders of steel plate with Eastern firms. The enlargements to the steel company's plants are progressing rapidly. At a meeting of the Board of Directors on Thursday of this week it was announced that the business of the corporation for the year will break all records for production.

The plant of the Harrisburg Foundry & Machine Company is being worked double time. Orders were received this week for a 250 horse-power engine for a new plant of the Barber Asphalt Company in New Jersey and for a 200 horse-power engine for the Joseph Wharton furnaces at Port Oram, N. J.

There is evidently no truth in the report that the Susquehanna Iron & Steel Company propose to abandon their incomplete pipe mill at Columbia. Work was resumed this week after a short suspension and the contractors have put an increased force of men to work on the new buildings and furnaces.

The Standard Emery & Supply Company of Albany, N. Y., will build and operate a plant at Easton, Pa. The company were established 11 years ago and the plant at Albany has been outgrown.

The directors of the Cambria Foundry & Machine Company of Johnstown on Friday declared a second regular dividend for the year, payable January 1.

The Aurora furnace at Wrightsville was banked last Sunday on account of lack of fuel.

At a meeting of the stockholders of the Schatt-Morgan Cutlery Company of Titusville these officers were elected: President, J. W. Schatt; vice-president, C. B. Morgan; secretary and treasurer, C. B. J. V. Crouch; directors, John Fertig and E. O. Emerson. The company were chartered last week in this city with an authorized capital stock of \$35,000. Of this \$15,000 is preferred stock and is owned by Titusville people. The remainder is the property of Messrs. Schatt, Morgan and Crouch, the officers of the company. For the present the manufacture of penknives will occupy the attention of the company but later razors and shears will be made. It is thought that the new plant will be in operation by January 15.

Increases of capital stock of corporations filed at the State Department this week include: The Landis Tool Company of Waynesboro, \$100,000 to \$150,000; Union Steel Casting Company, Pittsburgh, \$200,000 to \$300,000; the Central Steel Car Company, Pittsburgh, \$1000 to \$300,000. All of the companies announce their intention of improving their plants with the money derived from the sale of stock.

The 12-inch mill of the Eastern Steel Company, at Pottsville, recently put in operation, was compelled to suspend operations this week until new cranes can be installed to carry steel from the mill to the bridge works, and wet weather put a stop to the work of building the new mills and furnaces now being constructed. The 19-inch mill last week turned out more than 700 tons.

The National Malleable Iron & Perfection Company have purchased a large tract of land in Spring City from Senator W. P. Snyder on which they will erect a

plant for the manufacture of malleable iron products. About 300 men, it is understood, will be employed.

The directors of the Geisler Mfg. Company of Waynesboro on Monday declared a regular annual dividend of 8 per cent. and an extra dividend of 2 per cent. At the same meeting this resolution was passed: "Resolved, That because of the unusually profitable year and as an evidence of our appreciation of the fidelity and loyalty of our employees to the company's interests, the company will pay to the men in their employ December 24 a premium on their wages for the year of 5 per cent., and a similar premium to all office employees receiving less than \$3 per day." The stockholders decided to purchase land in Springfield, Mo., and in Oklahoma, for storage and warehouse purposes. The business of the company has grown to such an extent that Western storage facilities are absolutely necessary. The plant at Waynesboro will be enlarged during the coming year. The old officers have been re-elected.

The Smith Mfg. Company of Waynesboro, whose plant has been closed on account of the lack of fuel, are again operating it.

The Princess Furnace at Glen Wilton, Va., owned by D. S. Cook of Wrightsville, has been put in blast after having been out of service several months on account of lack of fuel.

S.

## Shenango Valley Iron Notes.

SHARON, PA., December 13, 1902.—The Pennsylvania lines will make many improvements around Sharon this winter and next spring. These will include the relaying and straightening of track, putting in a second track and the erection of a new and larger station at South Sharon.

The serious accident on December 3 at South Sharon has been found by the coroner's jury to have been caused by the crane man in charge of the crane from which the ladle spilled was suspended. Two men were killed and several injured.

The mineral wealth of Lawrence and Mercer counties, consisting chiefly of coal, limestone and sandstone, is having a development which would not have been dreamed of a few years ago. The quarries in Lawrence County, owned by the Marquis Limestone & Clay Company, the Johnson Company and the Republic Iron & Steel Company are turning out immense quantities of limestone. Brick kilns are added to all of these limestone properties and the stripping is partially utilized for brick clay. The Pennsylvania Stone Company, composed of Youngstown capitalists, are operating very large fire stone quarries at East Brook and at New Castle, their product being in the best demand for lining for converters. It goes principally to Cleveland and Youngstown, Ohio. The Harrison Fire Stone Company are a new concern, made up of New Castle capitalists, who have opened an extensive quarry at Mercer, on the Pittsburgh, Bessemer & Lake Erie Railroad. The entire output of this quarry goes to the Carnegie Steel Company. This is only a small part of the great activity now going on in the quarry line, but the extent of their equipment shows that they have strong hopes for a long continuance of present activity.

In New Castle the standing idle of the large rod mill, the wire nail mill and the two large works of the American Tin Plate Company has had a considerable effect upon business the past year. The tin mills have been idle several months, and while it is hoped that they will be running by the first of 1903, no definite announcement has yet been made. The extensive sewer and conduit work being done by the city has to some extent relieved the dullness, but it would be a great help if the tin and nail mills should resume.

The Bitner Brick Company have been organized by New Castle and Pittsburgh capitalists and a charter has been secured. The capital of \$100,000 will be employed in erecting a brick plant near Volant, Lawrence County.

J.

The New England Foundrymen's Association.—A regular monthly meeting of the New England Foundry-



men's Association was held on Wednesday evening, December 10, at the Hotel Essex, Boston. About 40 members were present. Dinner was served at 6 o'clock, and business sessions were held before and after the dinner. Secretary Stockwell suggested the establishment by the association of a bureau of general foundry information, with special reference to molders, giving information likely to be of assistance to members of the association, and the chairman appointed Messrs. McKee, Gibbey and Anthony as a committee to report on the matter at the January meeting. Three firms were admitted to membership—the Kabley Foundry Company, Worcester, Mass.; Kinsley Iron & Machine Company, Canton, Mass., and George A. Reed & Son, Gloucester, Mass. A few changes in the by-laws were suggested. The speaker of the evening was James H. L. Coon, an insurance inspector, of Watertown, Mass. His subject was "Insurance Inspection; Its Importance to the Manufac-

put. The harvester consolidation, formed last summer, took in practically all the leading manufacturers of harvesters, with the exception of this plant."

### The New Buffalo Down Draft Forge Furnace

We here illustrate a forge furnace adapted particularly for heating work in connection with steam hammer and similar heavy forging. A new idea has been introduced in building this forge in sections. Two of these sections are shown in the engraving. In this way the capacity may be very easily increased at any time by installing additional sections. The first or original section is 30 inches long, and each additional section adds 36 inches to the length of the forge, making 66 inches, the usual length. Each section is furnished with balanced slide doors on all four sides. When these doors



THE NEW BUFFALO DOWN DRAFT FORGE FURNACE.

turer," the principal parts of whose paper are published elsewhere in this issue. The next meeting will be held on Wednesday night, January 14, 1903. William J. Keep of Detroit, Mich., will speak on "Calculating Foundry Mixtures by Chemical Analysis and Regulating Foundry Mixtures by Mechanical Analysis."

**Minnie Harvester Company.**—The Minnie Harvester Company of St. Paul, Minn., were incorporated in Minnesota early in November with \$6,000,000 capital stock in \$100 shares, all owned by the American Grass Twine Company. The following statement is made: "When the American Grass Twine Company were formed they took over the Walter A. Wood harvester plant at St. Paul, which covers upward of 28 acres. This plant turns out the Minnie harvester, which uses the binder twine manufactured by the Grass Twine Company. It is intended to enlarge the works and increase the out-

are opened access may be had to any part of the forge. The height of the floor to the top of the grate is 36 inches, the door sills in turn being set slightly above the grate, which is of the improved rocker grate type, 24 x 66 inches. In the cut the lever attachment for rocking the grate and removing the ashes and the chain connected to the air box are shown.

The down draft principle of smoke removal is incorporated in this forge. The stationary exhaust hood is shown at the top of the forge. The smoke and gases are completely withdrawn by down draft suction through underground tile pipe, there being no escape from even the heaviest fires. This does away with all overhead iron piping. A clean out door is placed at the bottom of each section, allowing of easy access below the grates. The forge is lined with fire brick, and in the roof there is an additional strip of asbestos. The weight of the forge alone—i. e., two sections without the brick lining—is 5000 pounds.

### New Publications.

**La Crise Allemande de 1900-1902. Le Charbon, Le Fer et l'Acier** (The German Crisis of 1900-1902. Coal, Iron and Steel.) By André E. Sayous, Bibliotheque du Musee Social, Paris, 1903.

Apparently under the auspices of the Musee Social, of which Jules Siegfried is president, M. Sayous has spent some time in personal study in Germany, and has industriously ransacked current official and contemporaneous literature for facts regarding economic conditions during the past few years. The book is really the outgrowth of an effort to reach a judgment concerning the syndicate system in the German coal and iron trades. It is a fascinating subject, and yet it is one which it is difficult to do justice to, because the German syndicates, while apparently frank in some respects, surround their operations with a good deal of mystery. It has often appeared to us as though German journalism is less enterprising in bringing out the facts than our own newspaper men would be. We can well appreciate the difficulties under which M. Sayous has labored, enhanced as they must have been when a foreigner must rely upon himself to form an estimate of the purity of his sources. We observe that he occasionally quotes opinions expressed by contributors to journals whose animus is only too apparent. Still, so far as we are able to judge, as distant spectators, M. Sayous has been very successful in winnowing the wheat from the chaff and in presenting a clear historical review, brought closely up to date, of the movement toward the organization of industry in Germany. M. Sayous has given his work the title of "The German Crisis" and does deal with that very interesting subject quite fully, but after all the true purpose of the book is that just touched upon, and that gives it its special value. He prefaces it with a general review of the mineral resources and of the development of coal mining and of the iron industry, traces the growth in number and in power of the syndicates during the prosperous years from 1895 to 1899, goes then into detail for the year 1900 and for 1901, and brings the year 1902 up to the end of October. The two final chapters, "The Kartels and the Crisis," and the "Conclusion," are really the most interesting. M. Sayous is not an abject admirer of the flower of Germany's development of industrial organization. We cannot help feeling that he, too, has been somewhat irritated by the overbearing optimism of some of the German champions of it. Years of prosperity had not alone made the syndicate managers somewhat arrogant, but there was a thinly veiled assumption of superiority over the rest of the world in the matter of handling modern industrial organization. Success had silenced the critics and fear kept the grumblers very discreet. The fact was lost sight of that combinations, gentlemen's agreements, syndicates, &c., lead a fairly cheerful existence during a rising market, but that the disintegrating forces steadily at work during the best of times are unmasked during periods of depression. Human nature is frail in Germany as elsewhere. Unrestrained power breeds arrogance, while the pressure of adversity is apt to make considerations for the common good disappear before the exigencies of personal salvation. The ordinary gentlemen's agreement soon disappears and the elaborate syndicates lead a precarious existence just when their benign influence should most be exercised. M. Sayous states that the principal German syndicates have a certain tendency toward moderation. In times like these the equalization of prices will not be possible unless tariff barriers are raised or international agreements are reached, and so long as the system of export premiums is not too much developed. A delicate question to decide is whether it is wiser, instead of maintaining prices, to lower them, in order to make numerous small profits rather than a few large ones. M. Sayous makes one interesting point and that is that the "cartels," or syndicates, do not usually bring about a concentration of production like the trusts. They even arrest it and lead to keeping the weak alive. To a certain extent the

syndicates do lead to a lessening of the number of producers, since sometimes one plant will purchase others outright in order to secure its percentage in the pool. On the other hand, the starting of outsiders leads to decentralization. M. Sayous is naturally much concerned in the policy followed by the syndicates, systematically, of export sales of surplus, even at a loss if need be, and cites some instances in which the Germans have hurt their own industries in this way. Thus the building of boats for the Rhine navigation has gone almost entirely to Holland, because the Rhenish Westphalian plate mills sell to Dutch yards cheaper than they do to German establishments. He states also that a hardware manufacturer has established a branch plant in Belgium, in order to do the finishing on such goods as are destined for the export trade. We fancy, however, that these are minor exceptions and that on the whole the manufacturers find the policy of export premiums or special prices profitable indirectly. Just how the German consumer regards the situation is quite another matter. Whether injury is done is probably not an abstract question, but one of degree. It may be justifiable and be an excellent policy for the community at large as well as those directly interested if carried to a certain point. It may be a national abuse and a calamity when pursued to the lengths which it has been in the sugar industry.

In his conclusions, M. Sayous expresses the belief that the outsiders are destined to disappear in the near future. We cannot agree with him, on general principles, nor do we believe that he is correct so far as the German steel trade in particular is concerned. We believe that the German syndicate is too loose an aggregation to withstand the shocks of bad times—in fact this depression has given evidence thereof. We go further when we doubt whether our own "trusts" can or ever will kill off and overwhelm the outsider, meaning, of course, not the present individual, but the class. The iron and steel industry has not reached its final condition, nor will the time ever come when fresh capital is not tempted into the business, wisely or unwisely, and it is unfortunately true that often a foolish competitor may be much more dangerous than one whose enterprise possesses sound merit.

M. Sayous touches briefly upon the question of government intervention, and here, too, we have the cry for publicity, that panacea for all the timid souls, and the demand for power to punish the wicked by removing the import duties. M. Sayous seems inclined to the belief that the future lies with socialistic measures, either by nationalizing mines and mills or placing the nomination of the directors of the selling syndicates, endowed with wide powers, into the hands of the state. It may be confessed that that seems to be the logical end of the course pursued by all who turn at all to the Government to take care of their interests, whatever form it may assume. Affairs are shaping so that the industrial world will be gathered into two great camps, the collectivists or socialists, and those who believe in untrammelled individualism, who believe in relegating the functions of the Government to police duty, pure and simple.

**Future of the Gas Engine.**—In the opinion of Professor Thurston the gas engine is a formidable rival of the steam engine, and is capable of further development. Each has given a horse-power for about 1 pound of coal, and the efficiency of both, between the coal pile and the point of delivery, is about 20 per cent. The steam engine, he says, has so nearly reached its limit that further progress under commercial conditions would seem to be very slow, but its range may be increased by employing very high pressures and superheating combined with them. In Sibley College work 1000 pounds per square inch have been used, and Professor Thurston expresses the view that twice that pressure may be successfully used eventually, or with sufficient experience in its management. These factors would considerably raise the efficiencies and reduce the coal per horse-power hour to about  $\frac{3}{4}$  pound.



### American Locomotives in Japan.

E. C. Bellows, Consul-General at Yokohama, sends an interesting report to the State Department, from which we take the following:

In 1870, when the Government of Japan decided to construct a railroad it accepted British assistance for the inauguration of the work, and of course followed British standards throughout, and on the main island no other type than that of the English engine was even thought of for many years. In Kiushu, the large island at the south, the first railroads were built about 1881 and in the Hokkaido, at the north, at nearly the same time, the Germans constructing and equipping the former, while the latter were in charge of American engineers, who procured all their supplies from the United States. Three standards of railway equipment were thus introduced into the Empire. There was no marked change in the conditions thus introduced into Japanese railway affairs until 1897, when 125 locomotives were ordered from America for the Imperial and Nippon railways in the main island, the Nippon being the most important of the private railway companies. Since that time the importation of English locomotives has never greatly exceeded that of American, and now more than 500 locomotives of American manufacture are in daily use in Japan, where the entire number of all kinds is not far above 1200.

Of the private lines, the Kiushu and the Sanyo railways are next in importance to the Nippon, and these were the first after the Hokkaido to order locomotives from America. A representative of the Sanyo Railway stated that the principal reasons for preferring American engines are the lower price and shorter time required for filling orders. He added that, at first, the engineers being accustomed to the English locomotives, and not understanding the management of the American engine, found that the latter consumed more coal; but since the drivers have become accustomed to the use and treatment of the American locomotive, they find no material difference in this respect. The tire of the American locomotive has proved more durable, and they recognize advantages in the sight feeding lubricator, the air valves for the cylinders, and the more comfortable driver's cabin. On the other hand, the boilers are more apt to leak than in the English engine.

On Kiushu Island about 50 German locomotives were supplied at first, but the use of the German engine in Japan practically stopped there, as very few have been brought from that country since, and the small volume of business they still hold in this line is said to be due to the employment of German engineers at the Government iron foundry at Wakamatsu.

From 1897 to 1901 the Government railways of Japan permitted tenders for building their locomotives only from British makers, because they were persuaded of the superior qualities of the English engines; but the Schenectady Works of the American Locomotive Company, having sold some engines to private railways in this country, were enabled to demonstrate to the Government the merit of their product, and in 1901 they were added to the list of approved makers.

Although in competition with five British firms the American Company were able to meet all the stern requirements of the Government specifications and break down the British monopoly of four years, by taking an order that same year for 30 locomotives. According to Japanese law, no tenders will be received for locomotives on the Imperial railways, which include nearly one-fourth of all the railways in the Empire, except from makers on the approved list, but the party making the lowest offer received must be awarded the contract. Since 1898 more than 155 locomotive engines from the Schenectady Works have been sold in Japan; the Baldwin Locomotive Works have sent 255 engines in the past ten years; and the Brooks, Pittsburgh & Cooke Works have also a number of engines running on Japanese railroads and doing such satisfactory work that the company have this year been added to the approved lists of several roads, heretofore confined exclusively to tenders

from British makers. This gives American manufacturers an opportunity to compete with British locomotive builders; but just at present the unusual demand for steel and its high price in the United States is a serious handicap.

On October 16, 1902, tenders were opened for five lots of six locomotives each, with spare parts, for the Imperial Government railways. It was a kind of international competition, English, German and American firms being among the bidders. The lowest bid—\$306,574.90—was put in by Okura & Co., a Japanese firm who represented Dubs & Co. of Glasgow, and the Rogers Works of America. The bid of Okura & Co. having been accepted, the Government had the opportunity of choosing between the two manufacturing firms named above, and the contract was awarded to the Glasgow works.

Many of the sales made by American firms during the last four years are due to the energetic work of Willard C. Tyler, who was sent here by the American Locomotive Company. This confirms what has before been emphasized in my reports—viz., that if America is to compete successfully with Europe in the effort to secure this market, it is necessary that authorized representatives of manufacturing firms should come into actual, personal contact with these people, learn their needs, and show them the superior quality or cheaper prices of American goods.

### The Society of Western Engineers.

An extra session of the Society of Western Engineers was held at the society rooms in the Mondanock Building, Chicago, on Wednesday, December 10. Capt. H. W. Jacques of Boston, formerly of the United States Navy, addressed the society on "Submarine Navigation and Warfare." The lecture was illustrated by stereopticon views. Preceding the address by Captain Jacques, Gen. Wm. Sooy Smith, who has recently returned from an investigation of the harbor at Port Arthur, China, gave an interesting talk on the result of his trip.

As Captain Jacques was delayed in reaching Chicago, J. H. Warder, secretary of the society, kindly consented to occupy a portion of the time, and by the aid of a diagram explained the industrial organization of the Allis-Chalmers Company. He dwelt upon the lines, extent, scope and responsibilities of the several departments and the interrelation existing among them.

At the regular meeting of the society on Wednesday, December 17, a paper entitled "Diversity of Practice in General Engineering on American Railways," by Archibald A. Schenck, M. W. S. E., was the subject of the evening. An advance copy of the paper had been sent to members to facilitate discussion.

The Saxton Furnace Company of Philadelphia, operating the Saxton furnaces at Dayton, Pa., increased their capital stock from \$450,000 to \$650,000 for the purpose of purchasing the Valley Iron Works, at Coatesville, Pa., formerly operated by W. W. Kurtz & Sons. The works contain five puddling furnaces, four heating furnaces and four trains of rolls, including one 18 x 72 inch muck, and one 24 x 72 inch, one 30 x 96 inch and one 30 x 110 inch plate train. The annual capacity is about 10,000 tons, and the product plates exclusively.

The Iowa Implement and Vehicle Dealers' Association met in annual session December 4 at Des Moines, Iowa. The address of welcome was delivered by A. B. Cummins, Governor of the State of Iowa. Reports of the several officers and various committees, together with the reading of a few interesting papers, comprised the principal transactions of the convention. The following were named by the Nominating Committee as officers for the ensuing year and unanimously elected: President, O. V. Eckert; vice-president, A. J. Sowers; director, Charles Harris.

## Blast Furnace Gas Engines and Their Work.\*—III.

### The Cockerill Engine.

It may be remembered that the Cockerill engine was first operated without cleaning the blast furnace gas. This led to a number of difficulties, the cylinder surface particularly being worn seriously. Now that adequate cleaning of the gas is general it is hoped that this exceptional wear will be removed. Aside from this trouble

forward. Therefore it is not exposed to the highest temperatures and the connection of the jacket to this flange is sounder. With this design of cylinder head the inner and the outer walls between the inlet and the exhaust valves alone can cause difficulties. It is true that it must be regarded as a drawback of the former Cockerill design that the cylinder is cast in one piece with the cylinder head, so that a defect in one leads to the replacement of both.

The governing of the Cockerill engines thus far built was arranged by means of an adjustable air governor

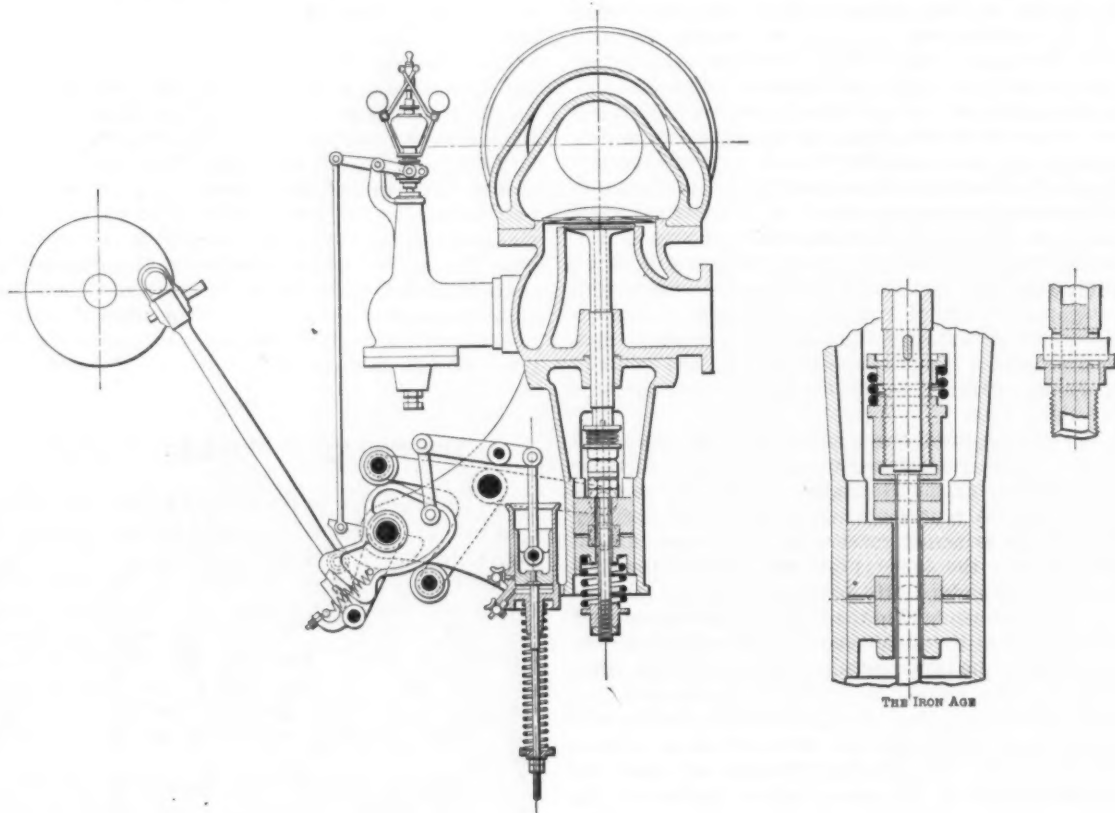


Fig. 8.—The New Cockerill Inlet Valve.

and from the difficulties incident to the first introduction of such matters the Cockerill engine has proven to be a reliable machine in practice. This is all the more remarkable since from the outstart and until recently the Cockerill gas engine had the largest units per cylinder, about 600 horse-power. The apparent durability of the Cockerill cylinder head may be explained from the fact that the engine works with moderate compression and therefore under low temperatures. This is confirmed by a statement made by the firm that the consumption of cooling water per hour of horse-power is larger than it is with other designs, being 80 liters warmed from 15 to 40 degrees C. The cooling water therefore carries off  $80 \times 25$  equal to 2000 calories per hour per horse-power, while this figure is reported to be by other firms 1000 to 1200 calories. The construction of the cylinder head appears to me to possess several advantages. Placed below is a water cooled exhaust valve and inlet valve, which also serves as a mixing valve, and in front of them in the cold part of the cylinder head there is an air and a gas valve. With this arrangement the connections between the inner and the outer wall, which transmit the expansion strains and which hinder the water circulation, are reduced to a minimum, and in this way a very effective cooling may certainly be carried through. Besides this the design of cylinder head used thus far possesses the peculiarity as compared with others that the flange for securing it to the cylinder jacket is very widely drawn

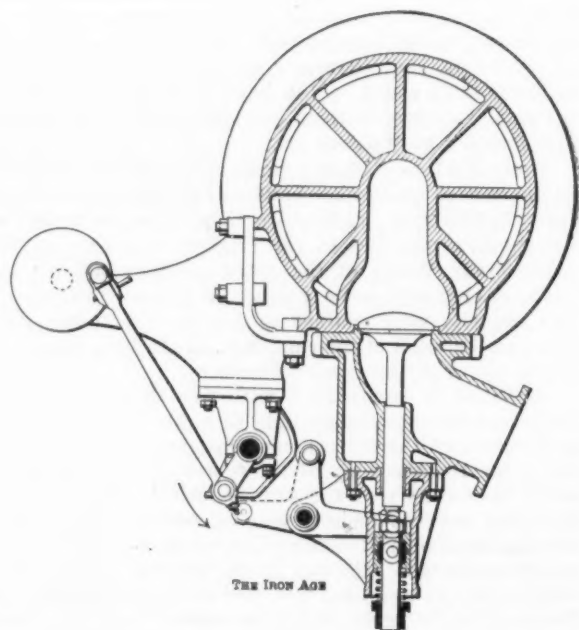


Fig. 9.—The New Cockerill Exhaust Valve.

and is adequate for blowing engines and for direct current dynamos. For alternating current dynamos, however, it will probably prove unsuitable. Therefore, in the latest designs Cockerill has introduced a new governor, shown in Figs. 8 and 9. Like most of the modern

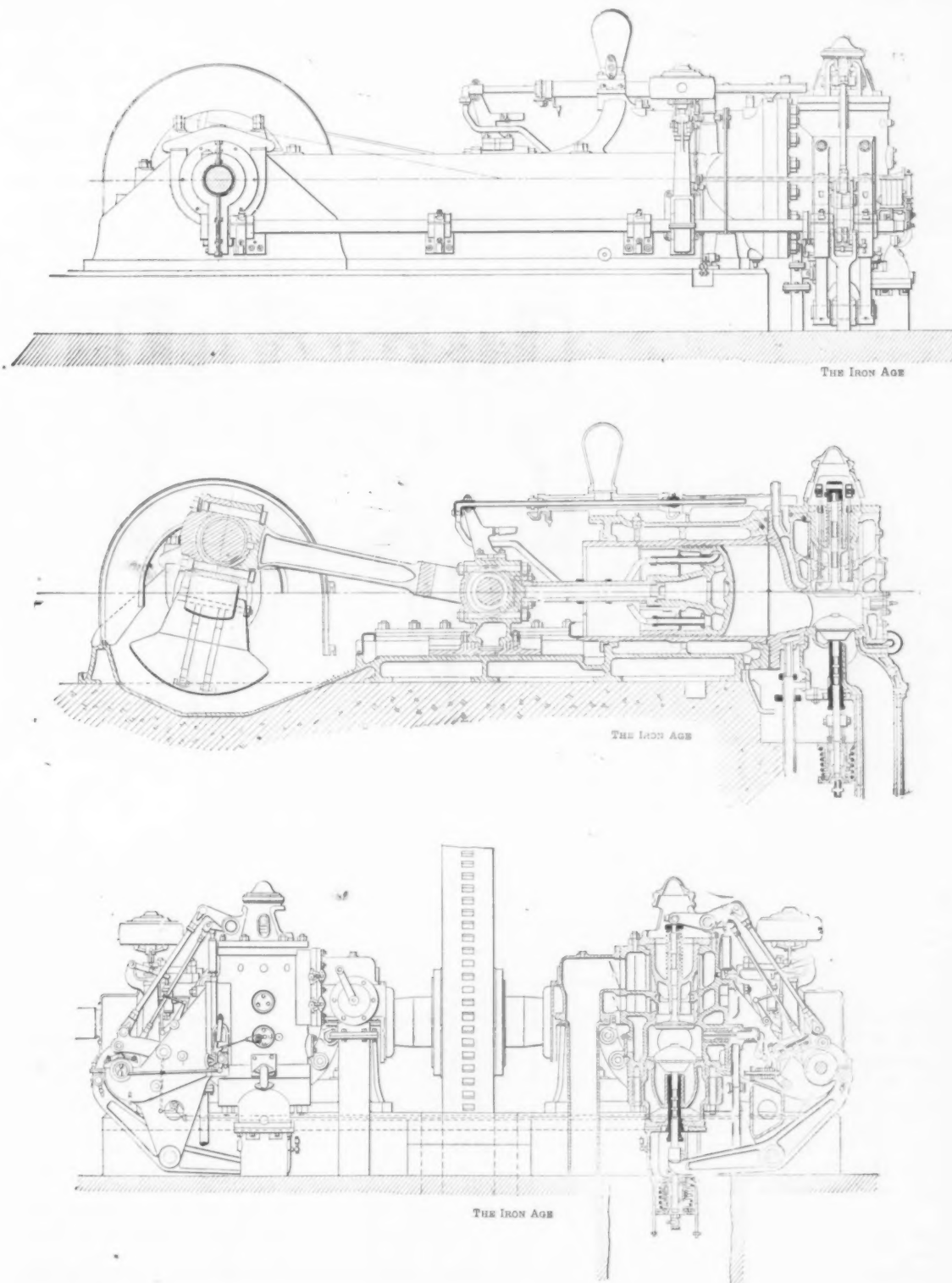
\* Abstract of paper read before the Verein Deutscher Eisenhuettenleute by Direktor Reinhardt of Dortmund, Germany. Continued from *The Iron Age*, December 4, page 28, and December 11, page 12.



governors, this depends upon regulating the quantity with variable compression in such manner that the special air and gas valves of former designs are omitted and that the spindle of the inlet valve is guided by the hollow spindle of a second smaller valve. Both valves are actuated by the same governing mechanism, the one

with the inlet valve direct and was served by a latch motion. This company, however, gave up this design because the necessarily violent spring pressure yielded too much back pressure upon the governor and affected the mechanism.

In the case of the Cockerill cylinder head the ex-



Figs. 10, 11 and 12.—Nuernberg 350 Horse-power Twin Gas Engine for the Rostock Electrical Station.

valve admitting air and the other gas. The governor operates in the following manner. According to the position of the governor at the determined moment of the suction stroke a latch mechanism is released so that both valves suddenly close through the action of springs. The governing mechanism itself takes part in this sudden movement. In its principle this governing apparatus is the same as that used by the Deutz and Nuernberg companies. The former had such a gear in operation in which the mixing valve was combined

haust valve is placed so low that surplus oil and dirt can be removed. The arrangement is such that it is rather difficult to take away the valve case, but it is possible to reach the valve through an opening for the sake of cleaning. Naturally the very large exhaust valve puts a heavy strain upon the governor shaft and its mechanism, so that the wheels and the journals are subject to a good deal of wear. The ignition is obtained in a spark chamber, in which electric sparks are constantly formed, through the intermediary of a slide

valve, which connects this spark chamber with the cylinder at the proper moment. The period of ignition may be adjusted when the engine is to be started. The Cockerill ignition apparatus has the advantage that the sparking is not prevented by moisture accumulating in the cylinder head during times of idleness. Therefore in starting the ignition is surer. Cockerill now uses the Bosch igniting apparatus. It is only recently

Ever since the firm of Cockerill have substituted a cast iron frame for the well-known rod connection between the cylinder and the pillow block the engine has a thoroughly solid and strong look. With their ordinary four-cycle design arranged as a double tandem engine Cockerill reaches a maximum power of 2400 horse-power, which is doubled in the case of the double acting four-cycle motors to be described further on.

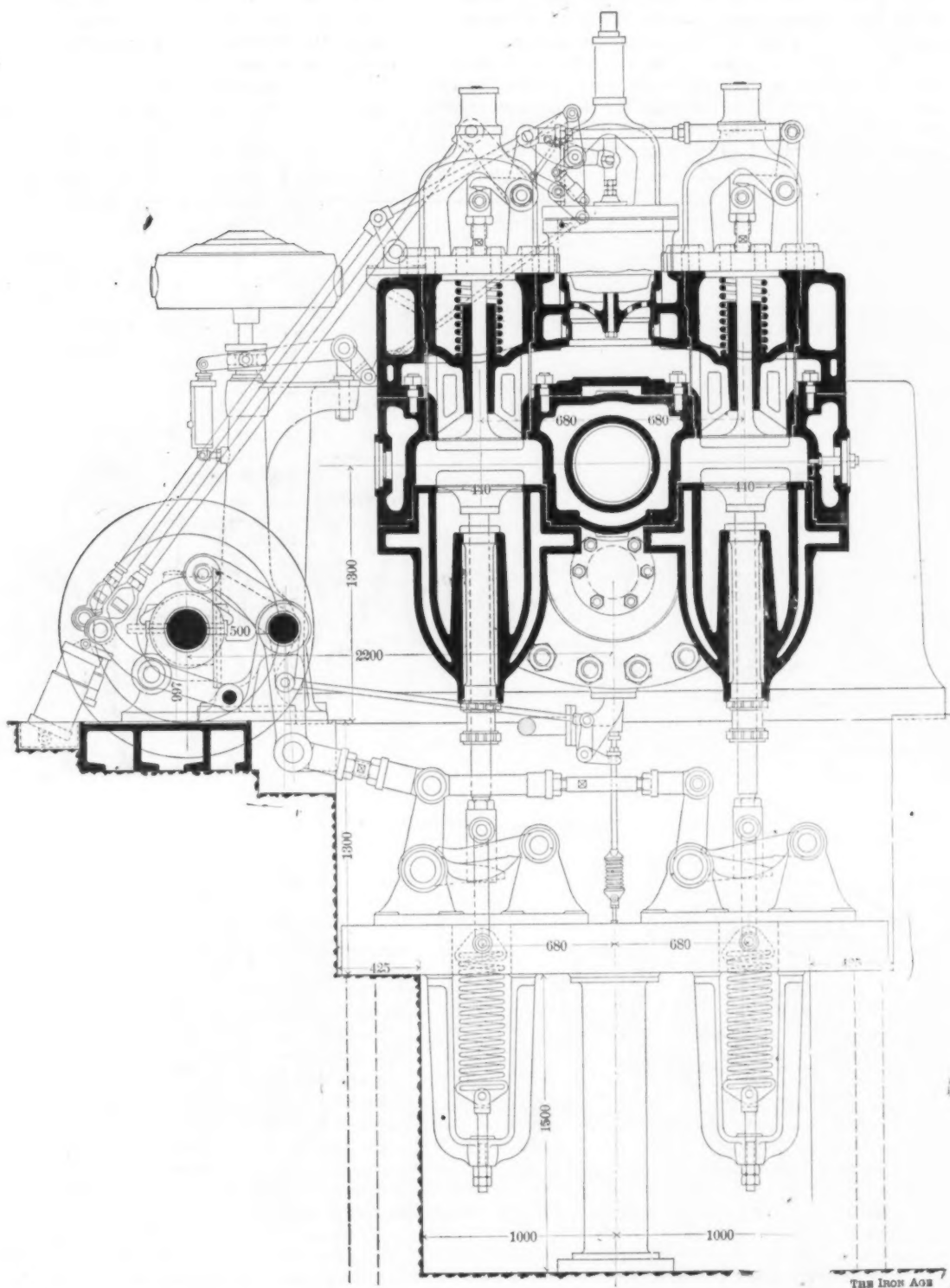


Fig. 13.—Valve Gear of 750 Horse-power Single Cylinder Nuernberg Gas Engine for Rheinische Stahlwerke.

that the engine is started with compressed air, as is done with other motors, having been done formerly by a mixture of benzine. This arrangement is said to have refused occasionally in former times. To-day, however, the benzine evaporator, a very small apparatus compared to the engine itself, is said to have been improved so that the starting of the engine with benzine is now without a defect. The engine has no guides, the cast iron piston without any white metal lining is cooled, and both it and the cylinder are provided with oil grooves.

#### Nuernberg.

The Maschinenbau Gesellschaft Nuernberg has preferred the tandem arrangement for larger powers. At the present time a 750 horse-power single cylinder machine is being put up at the Rheinische Stahlwerke at Meiderich. This is probably the largest four-cycle cylinder engine thus far constructed. The designs of this famous firm of steam engine builders show the tendency to equip the gas engine with all those arrangements which have proven satisfactory in the case of the steam



engine. Above all, this applies to the special guides. Originally the Nuernberg engine was so arranged that the piston prolonged forward bore the cross head pin and that this cross head was guided in round guides. This in itself was not a particularly good method of guiding, but it was an improvement, and above all brought the piston pin outside of the hot zone. Now Nuernberg build even four-cycle engines of 200 and 250 horse-power with complete guides, as may be observed from the accompanying figures, 10 to 12, showing an engine built for the electric station at Rostock.

The Nuernberg engine inspires a good deal of confidence through its heavy frame, upon which the cylinders are bolted. It is true that in the tandem engine the front cylinder head seems difficult to get at so far as the exhaust valves and their gear are concerned. This, however, is not usually of much consequence, since the exhaust valves may be reached from above. The cylin-

The employment of four valves, of course, makes the cylinder head and the gear somewhat complicated. It has the advantage, however, that the exhaust valves may be made to lift one after the other, thus reducing the shocks upon the gear shaft. The exhaust valve cases are difficult to manage so far as the effect of high heats are concerned. The Nuernberg design, however, has provisions for effective cooling. The governing is carried out in different ways by the Nuernberg Company. In the large 750 horse-power single cylinder engine the governor operates with the aid of a latch motion in a manner similar to that of many steam engines actuating a nearly counterbalanced double seat valve with air slide. The valve is lifted up by the gear rods, opening two separate ports for gas and for air in the same proportion and closing them rapidly. The design is shown in Fig. 13. This valve is very light and is placed as a fifth valve in the upper part and is

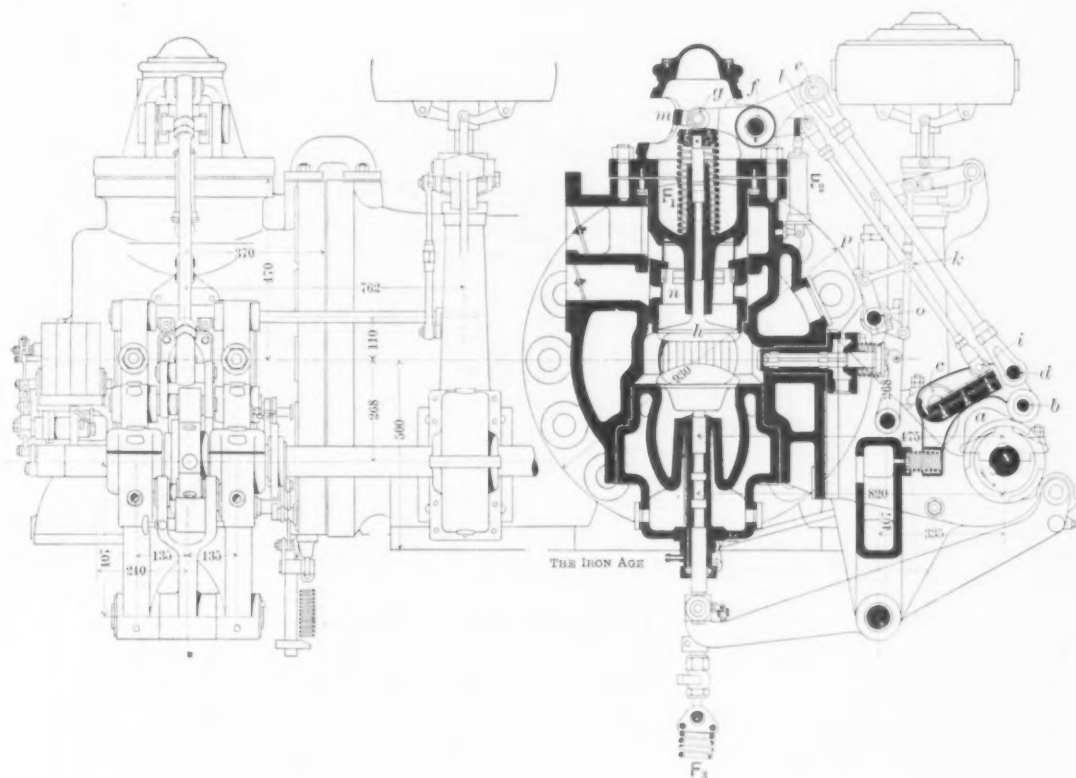


Fig. 14.—The New Gear of the Nuernberg Company.

der head is constructed in a peculiar manner and consists of several sets, one of them being the main part, a steel casting screwed on by means of a flange, and the other pieces screwed on from above, as shown in Fig. 13. By this subdivision the principal part becomes a simple casting. In consideration of the tandem arrangement, or rather of the piston rod which passes through, the cylinder head at the larger engines is so arranged that an inlet valve is placed at both sides of the piston rod, while one of the exhaust valves is located underneath each of them. The middle piece is so high that the valve cases, which are ground in, extend above and below. This design had evidently been so chosen in order that the inner wall is only partially exposed to the high temperature, and is cooled both from within and from without at its upper and lower ends. The strains upon the outer and inner wall are therefore reduced to a minimum in this part of the engine. On the other hand, the flange and the relatively thin outer wall of the cooling jacket offer little security. I do not believe in stiffening the flange and the outer wall by ribs as I have seen done in the case of several cylinder heads. The makers advise me that none of the heads of this design has yet cracked and that they have improved the same even further in their latest engines. The question naturally arises how long those heads which have not yet cracked have been in active service.

connected through short ports with both inlet valves. The latter are actuated by cams in such a way that they are open during the entire suction stroke. The mixing valve has closed before, the time being determined by the position of the governor, and the gas mixture under the mixing valve expands up to the end of the stroke with the inlet valve. The governing therefore is done by quantity with constant mixture and variable compression, which possesses the advantages already alluded to.

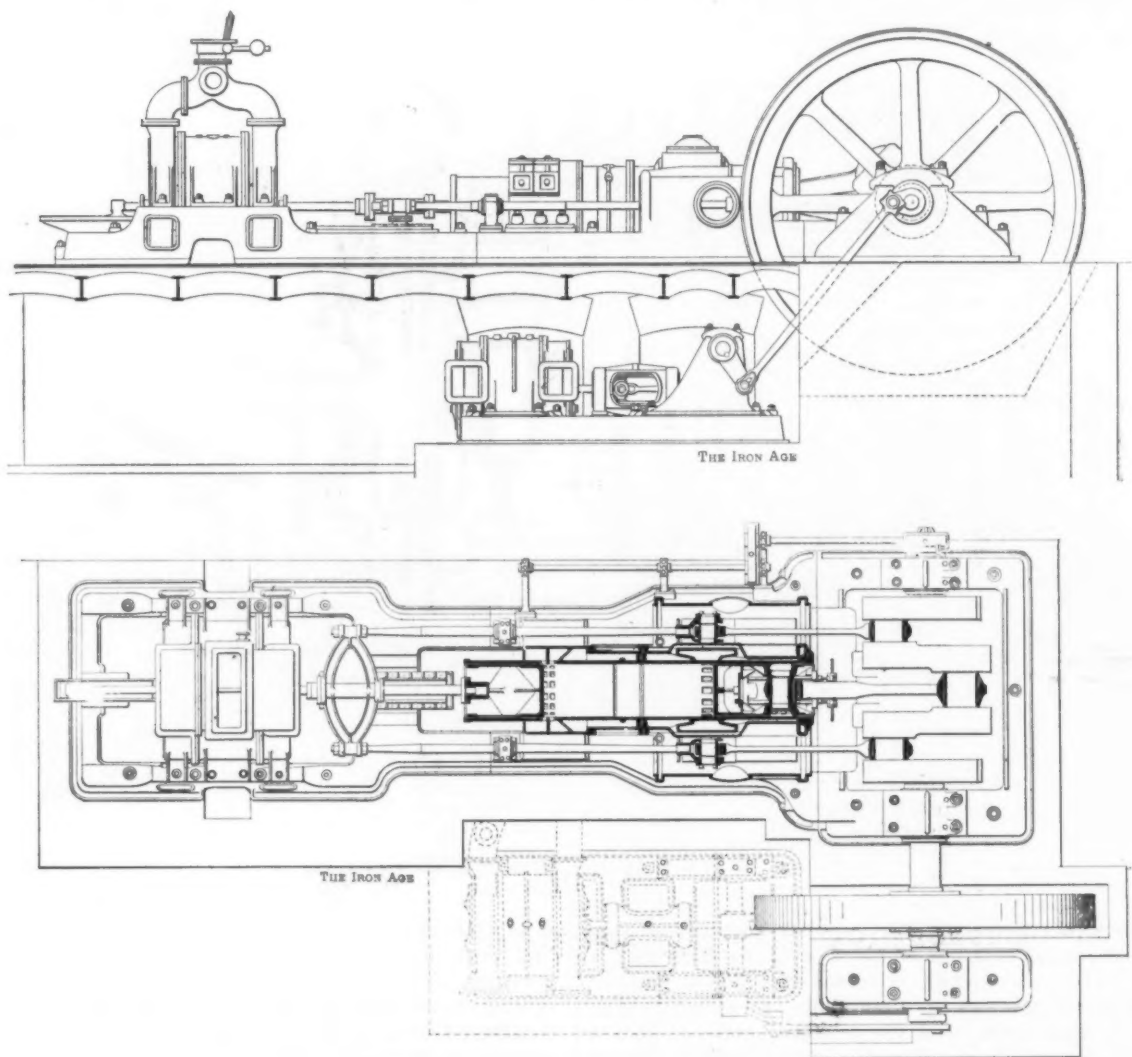
The very latest valve gear of the Nuernberg Company is shown in Fig. 14. From the governor shaft a pressure rod, *d e*, is guided through the intervention of a lever, *e b*, and a cam, *a*. The rod *d e* operates upon the inlet valve through the intermediary of a lever, *e f g*. This valve opens inward during the whole of the suction stroke. It is closed by a spring, *F'*. In the same valve cases is a nearly counterbalanced double seated valve, which permits the entrance on the one hand of gas and on the other hand of air in constant proportions. It is pressed downward through two spindles attached on both sides of the spring *F'*. The movement is secured through the intermediary of the forked lever *m f l* and the second rod *l i*. The roller *i* of this rod is in contact with a surface on the lever *e b*, so that the mixing valve is also opened during the entire suction stroke. The governor itself acts by displacing

the rod *l i*, by moving it on *l*, so that the roller *i* is more or less distant from the fulcrum *c* of the lever *c b*. In this manner the mixing valve opens more or less, according to the position of the governor, while at the same time the inlet valve makes the same stroke. The spring *F''* closes the mixing valve and keeps the rod in tension. This method of governing depends upon regulating the quantity and in its arrangements and operations corresponds closely to that of the Deutz Company. It seems to me, however, that the Nuernberg design deserves the preference, because the strain upon the governor is smaller. For all motors of 150 horsepower and upward the Nuernberg Company cool the piston and the particular method of supplying the water is patented to the firm.

Like in the case of other motors with guides, the

by riveting on an outer jacket of sheet metal. The construction of the engine has been improved in several respects.

The operation of the engine may be described as follows, referring to Figs. 15, 16, 17 and 18, the first two showing a motor coupled to a blowing engine and the second two one driving a dynamo: When the two pistons are closest to one another the space between them is filled with a compressed mixture of gas and air. On igniting it the pistons are driven asunder. At first the forward piston uncovers a ring of slits in the cylinder. At this moment the exhaust of the gases of combustion begins. Soon afterward the rear piston opens a second series of slits on the opposite end of the cylinder, through which air compressed to 0.3 to 0.4 atmosphere enters and takes care of the complete expulsion of the



Figs. 15 and 16.—Oechselhaeuser 500 Horse-power Gas Motor Driving Blowing Engine.

removal of the piston is very simple without disconnecting the connecting rod or the cross head. The Maschinenbau Gesellschaft Nuernberg now recommend double-acting four-cycle motors for large powers, but have not yet exhibited these latest designs

#### Oechselhaeuser.

The construction of the Oechselhaeuser engine is well known. Like all the early engines, these gave considerable trouble in practice at first, but are said to have involved little difficulty for some time since. So far as I know, it is only the governing in the driving of dynamos which is not quite satisfactory and is therefore to be changed. Sometimes, too, the outer jackets crack for the same reason that fractures occur with the cylinder heads of other engines. I believe that the latter drawback might be overcome if the short middle casting of the older engines, which is the explosion chamber proper, is not made with double walls, but is arranged

residual products of combustion. Then follows a third ring of slits. In the older designs a mixture of air and gas was forced in through these. In the more recent designs it is only gas, so that now the mixture is made in the cylinder proper. Since the exhaust slits open earlier and remain open longer than the gas intake slits there might be some fear that the gas mixture might be blown through. This is improbable, because in normal working a volume of mixture equal to only 70 per cent. of the piston displacement is used. When the return movement of the pistons starts the slits are covered one by one, the mixture is compressed to 8 to 10 atmospheres and the operation begins anew. One of the principal advantages of this system, therefore, is the absence of all valve gear. With the exception of a small valve for starting the engine with compressed air there is no mechanism on the cylinders.

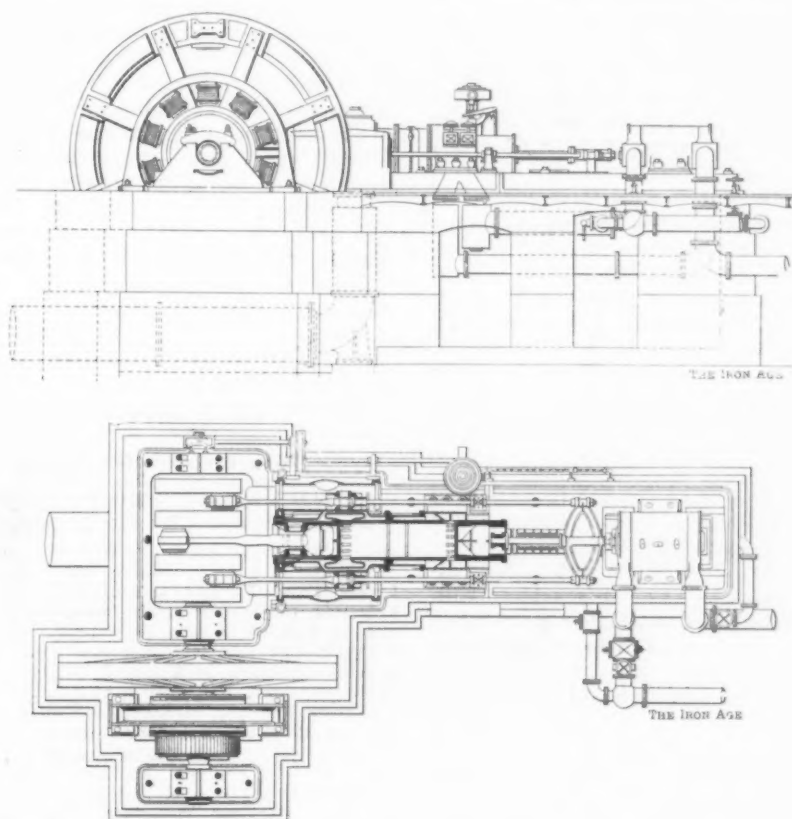
The chamber of combustion and the working chamber is a straight cylinder in its simplest form. It is



stated that deposits of dust, &c., do not occur to the same extent as they do with engines equipped with valves. Furthermore, the cylinder is cooled by the compressed air admitted, and if the latter be deliberately used this applies also to the exhaust slits and the metal in their immediate vicinity. With the simpler form outer cylinder cooling is very effective. The water cooled piston may be readily removed. Owing to the fact that both pistons run in opposite directions and that the connecting rods operate upon cranks placed at an angle of 180 degrees, the moving masses are largely counter-balanced and the engine rests relatively solid on its foundation. In spite of the fact that the bearings of the crank axle are wide apart it is not subject to serious strains, because the latter counteract one another to a considerable extent. There is probably no necessity for the two inner fly wheel bearings which are often employed in twin Oechselhaueser motors, so that the width of the engine might be reduced. In the later de-

does not seem a very easy matter in the case of the Oechselhaueser motor.

The simplicity of the Oechselhaueser engine is exceedingly attractive. One consideration is, however, that when once built no changes are possible in the methods of providing for the admission and exhaust. In this respect the quantities of gas and of air, the time, governed by the length of the slits, the area of the ports and the compression are dependent upon one another. It may be assumed, however, that now sufficient experience has been obtained. In the latest designs the indicated work of the air and gas pump has been brought down to about 6 per cent. of the indicated work of the working cylinder. The mechanical efficiency is stated to be 78 to 82 per cent. The Deutsche Kraftgas Gesellschaft reports the experience with the engine in driving blowing engines. When the blast pressure increases the engine automatically runs at a somewhat lower but uniform number of revolutions. One



Figs. 17 and 18.—Oechselhaueser 500 Horse-power Gas Engine Driving Dynamo.

signs two igniting mechanisms are used, which may be taken out and cleaned, if necessary, while the engine is running. This is worthy of imitation. The pump which supplies gas and air is placed below the foundation in the case of motors driving blowing engines, otherwise it is placed back of the working cylinder. One of the disadvantages cited against the system is that there are two connecting rods for the rear piston, which involves very accurate adjustment. Another point made is that air and gas are supplied by one piston, which, however, does not seem to have led to the slightest difficulties in practice.

In driving blowing engines the Oechselhaueser has the advantage that no stuffing box is necessary for the gas engine when the blowing tube is placed in line with it. With the twin arrangement the engine is suitable for driving alternating current dynamos, provided the new system of regulation comes up to expectations. I cannot give any details as to the character of this system of regulation, because the trials have not yet been concluded. Letters from the Deutsche Kraftgas Gesellschaft indicate that two types of regulation are provided for: one, less exact, by changing the flow of gas and the other by changing the quantity of gas and in a minor degree the quantity of air. To me the latter

necessary condition is, however, that at normal blast pressure the gas engine is not yet working at its normal rate per revolution, and that the auxiliary pump is relatively so large that ordinarily with throttled gas valve it sucks a sufficient amount of gas under a certain degree of vacuum. When the number of revolutions declines this vacuum is covered and a large quantity of gas is supplied. Since the quantity of air does not vary, there is therefore a corresponding excess of air and a somewhat larger consumption of gas during normal working. Ordinarily a higher blast pressure, when blowing engines are driven by gas engines, is obtained, without change of work, by reducing the quantity of air drawn in, or in other words, by beginning the compression in the gas engine later. It is also obtained in a simple manner by providing large dead spaces, an idea patented by Grabau for the Nuernberg Company.

A cablegram from St. Petersburg under date of December 12 states that the creation of the new Department of Mercantile Marine and Commercial Ports, under the Grand Duke Alexander Michaelovitch, is taken to mean that the Government intends to employ subsidies to build up the Russian mercantile marine.

## Lake Superior Mining News.

### Famous Section 30 Now to Be Explored.

DULUTH, MINN., December 13, 1902.—The famous Section 30, Vermillion range, which has been in litigation for 20 years, is now to be explored, in order that the riches generally supposed to lie hidden there may be found. Last week a decision was made by the United States Circuit Court in favor of the original owners on the last of their eight 40-acre tracts, and before the decision had been filed at Duluth it was announced that the Section 30 Company had taken an option from the owners and would explore at once. The ownership of this company seems to be as much hidden as the ore upon the land, though it is generally believed that it represents the fee holders themselves, together with certain capitalists of Duluth, attorneys who have been associated in the litigation and, perhaps, a prominent soft ore interest which has furnace connection in the valleys.

There will be the most lively interest in the results of explorations on this land, on account of the long and bitter fights that have been made over its ownership, in which it is probable that not much less than \$900,000 has been spent, first to last. The leaders in this litigation have been the Minnesota Iron Company and the Germania Iron and Midway companies, both of which latter appellations are pseudonyms for A. M. Miller, a capitalist of Duluth. From 1885 until three years ago the men who are now decreed owners, Messrs. Eaton, Merritt, Lonstorf and Fagan, were not in the litigation. They were ruled out of court by decisions of one of President Cleveland's early high officials, and were unable to get in again until A. M. Miller and his Midway Company had beaten the Minnesota Iron Company. Now they have a decree as to seven forties from the United States Supreme Court and as to the remaining 40 from the United States Circuit Court, all eight 40-acre tracts standing on the same evidence.

The formation on Section 30 is, so far as surface indications go, nearly as extensive as the Ely formation, in which are the Chandler, Pioneer, Zenith, Sibley, Savoy and Silverman mines, all belonging to the United States Steel Corporation. It has far more ore and Jasper outcrop than Ely ever showed. These Ely mines, with the Silverman not opened, produced this year about 1,790,000 tons, and are being equipped for a production very much greater than that. They are the cream of the Lake Superior iron ores, and if Section 30 is as valuable its lessees may be able to sell, when they have found the ore, at fabulous figures. It is presumed here that the lessees are taking the property for development and future sale. Development on this tract has been confined to a few pits by A. M. Miller, and to a few drill holes and many shallow pits by the Minnesota Iron Company. The deepest pit sunk by Miller showed ore from 40 feet to the bottom, some 90 feet down, and this ore ranged in analysis from 65 to 67.90 iron and from 0.028 to 0.016 in phosphorus. The ore so far as known is hard but not as dense as some hard ores. Test pits sunk on the "Sullivan forty" by the Minnesota Iron Company show ore in many places, and the diamond drill holes put down are supposed to have cut more than 1000 feet of ore each. Numerous drills are to be put at work as fast as they can be obtained.

### Mesaba Range.

The Union Steel Company will make a decided change in mining methods at their new property, the Penobscot mine, by which they hope to secure assistance in the problem of handling water. The mine has been deeper than any property in the vast Hibbing basin and has secured in its lower levels all water of that basin, amounting for years to between 4000 and 5000 gallons a minute. The new owners have commenced to strip the ore body at a point where there is but 60 feet of surface and will connect the open pit with the shaft and mill their product for some years. This will raise the bottom of the mine 100 feet or more and, they hope, so high that they will not be the bottom of the drainage basin. If they succeed in their changes they will put a new face on the operation of mines around Hibbing.

The Cass Mining Company, affiliated with the Zenith Furnace Company of Duluth, are now opening a mine south of the old Cincinnati, at Biwabik, and will take out ore immediately for the furnace. This is not a large deposit, but is good, both structurally and chemically. The same company have a large acreage in T. 59 R. 14, and are putting several drills there in the hope of finding ore on State leases. It is greatly to the advantage of furnaces within Minnesota to mine their product from State lands, and the Zenith Furnace Company propose to profit by this, along with their other plans for extensive works.

Papers transferring the 25-cent lease on the new one-quarter of the southeast quarter and the northeast quarter of the southwest quarter of Section 6, 57-20, to the Buffalo & Susquehanna Iron Company were completed in Duluth Thursday, W. A. Rogers coming to execute them. Plans for the further exploration and development of this tract are under consideration and it is probable that a mine will be opened there shortly. A find recently made in the southeast quarter of the northeast quarter of section 11, 57-21, and just sold, is of more than passing interest. It contains so far as proved about 11,000,000 tons and there is a thickness of ore of more than 250 feet. This find extends the width of the ore body at that point to nearly 2 miles, north and south. Ore exists in the southeast corner of section 35, 58-21, then across the Mahoning location  $\frac{1}{4}$  mile, then on across the Hull openings another  $\frac{1}{2}$  mile, then undoubtedly another  $\frac{1}{4}$  mile across Hull holdings, then across the new Agnew of the Deering Company another  $\frac{1}{4}$  mile, to the location under consideration, and through this at least  $\frac{1}{2}$  mile still further southward. This makes a width across the strike of the formation of nearly 2 miles of ore, while the formation extends north of the northerly find in 35 about  $\frac{1}{2}$  mile. Such a width of ore is unknown on the Mesaba range except at Hibbing, and is approached there only close to the town.

### Gogebic and Menominee Ranges.

Crystal Falls shipments for the year have been as follows, compared with the preceding year:

Mine.	Owners.	1902. Tons.	1901. Tons.
Crystal Falls, Corrigan, McKinney & Co.	193,000	230,614	
Columbia, Oliver Iron Mining Company	185,690	19,963	
Bristol, Oglebay, Norton & Co.	129,000	36,593	
Hemlock, Pickands, Mather & Co.	123,000	149,966	
Armenia, Corrigan, McKinney & Co.	100,000	18,750	
Tobin, Corrigan, McKinney & Co.	70,000	18,957	
Quinnesec, Corrigan, McKinney & Co.	62,000	66,383	
Lamont, Corrigan, McKinney & Co.	57,000		
Michigan, Oliver Iron Mining Company	53,273		
Great Western, Corrigan, McKinney & Co.	50,000	123,261	
Mansfield, Oliver Iron Mining Company	31,181	74,113	
Groveland, Corrigan, McKinney & Co.	7,387	11,444	
Hope, Oliver Iron Mining Company	3,373		
Dunn, Corrigan, McKinney & Co.	3,000		

The changes in the relative position of these mines are remarkable. Columbia's increase is in part due to the shipment of old stocks, and that of Bristol, Tobin and Armenia is due to improvements in the mines. The decrease in Crystal Falls is due to the pinching out of ore bodies on the level chiefly worked and that at Great Western to the abandonment of the mine for a portion of the year.

The Oliver Iron Mining Company's shipments from the Gogebic range have been as follows, as compared with the preceding year:

Mine.	1902. Tons.	1901. Tons.
Aurora	403,541	223,747
Atlantic	190,254	190,135
Chicago	44,625	
Norrie and Pabst	1,082,293	859,651
Tilden	482,032	446,670

The Oliver Iron Mining Company's shipments from Iron Mountain have been about as follows, though exact figures cannot be given for a few days as cargoes are leaving Escanaba to-day:

Mine.	1902. Tons.	1901. Tons.
Aragon	632,790	477,212
Chapin	952,479	929,791
Cundy	174,626	160,519
Iron Ridge	6,882	



## From Iron River:

Mine.	1902. Tons.	1901. Tons.
Dober .....	102,922 }	119,860
Iron River .....	112,669 }	
Michigan .....	53,272	.....

From Crystal Falls their shipments are given above, except that for Columbia the Oliver Company shipped 134,776 tons and the Crerar-Clinton interest sent 50,914 tons from stock pile. From Marquette range:

Mine.	1902. Tons.	1901. Tons.
Bessie .....	5,007	.....
Hartford .....	2,861	.....
Lake Superior (three-fourths total product) .....	623,962	476,732
Regent (three-fourths total) .....	313,358	300,634
Negaunee .....	208,565	234,713
Winthrop .....	124,496	100

The remaining one-fourth of Lake Superior and Regent, Marquette range, belongs to the Cleveland Cliffs Iron Company. The Cleveland Cliffs Company have shipped this year from their own Ishpeming properties and from the Ashland, Gogebic range, 1,500,000 tons, in addition to 312,440 tons from their one-fourth interest in Regent and Lake Superior. This is compared with 1,160,864 tons last year, outside Regent and Lake Superior.

The Pittsburgh Steamship Company carried their last ore for the year to-day, vessels leaving Escanaba for the lower lakes on this date. The company have several ships on the way up with coal for the head of Lake Superior and for Chicago, and their vessels will not be in winter quarters for some weeks. They have carried this year, on their own ships and by chartered vessels, 16,000,000 gross tons of ore, and the United States Steel Corporation have now sufficient ore delivered at lower lake ports to run their furnaces until next July. It would not be necessary for the Pittsburgh Company to turn a wheel until midsummer in order to keep the company's furnaces in steady operation. No such surplus of ore has ever been carried down the lakes intentionally, though conditions have been such in times past as to make a considerable surplus in stocks on receiving docks.

A notable event of the week has been the first shipment of iron ore from the Mesaba range to St. Louis, via the Great Northern and connecting lines. This has been Mr. Hill's plan for some time and is of far more importance than may be generally supposed. Mr. Hill aims to give such assistance to this traffic as will revive the furnace industry of the St. Louis district, and will give a considerable winter ore tonnage for the Great Northern and its associated Burlington lines.

D. E. W.

### The New Jones & Laughlins Road.

In an interview printed in the *Pittsburgh Commercial Despatch*, Hon. B. F. Jones made the following statement relative to the Pittsburgh, Niles & Western Railroad:

The plans are not fully decided on. The necessary surveys have been made and we have purchased some of the rights of way. The surveys were commenced a good while ago and continued piecemeal, and were only completed within the past week. Definite decision as to the construction of the line will be made soon. In fact, such decision will have to be made very soon, not to day, but perhaps within the next ten days.

We have secured our harbor property, near Geneva, Ohio, where Cowles Creek flows into Lake Erie. This we have bought and paid for, and have purchased other necessary property along the route. The Wabash will have a connection with this new line, we presume, and the same line of the Wabash giving this connection will connect with the terminals of the Carnegie Company, which will permit the Wabash to handle the tonnage of the contract with that company, which amounts to 25 per cent. of their total tonnage.

Through their connection with the Jones & Laughlins line, and their own line through the Mt. Washington tunnel, the Wabash will have two entrances into Pittsburgh. It is, therefore, all the more important that

the Wabash should be encouraged to carry out their plans. We have no contract with the Wabash as to tonnage.

### Pacific Coast News.

SAN FRANCISCO, CAL., December 10, 1902.—We are now close to the end of the most prosperous year that the State has ever seen. This is the time when business men start to take stock and wind up the affairs of the year and generally one of very little trade. But this season seems to be exceptional and business keeps on and doubtless will right on till the opening of 1903. All the hardware, iron and steel houses, those dealing in pipe, plumbing goods, &c., are very busy, while the foundries, machine shops, &c., are doing a good business. This is borne out by the statistics of the Clearing House, the exchanges of which grow larger as the year gets near its end. Indeed, the week ending Saturday, December 6, showed the largest clearings, except for collection weeks, in the history of the Clearing House, one week alone excepted, and that was when the buyers of the united railroads, as they are now called, paid out over \$18,000,000 for their purchase. The outlook for 1903 is exceptionally good. We have had up to the present all the rain we want, and farmers are jubilant at this and at the prices that prevail.

We have been to a large extent dependent this year upon Europe for our supplies of pig iron. Especially is this the case now when no supplies are to be had from Eastern or Southern sources at all, and of late almost every English ship has large supplies of pig iron. The following is the record for the past fortnight: "Rajore," Newcastle-on-Tyne, 500 tons; "Emperor Menelik," same port, 600 tons; "Anglesey," 450 tons; "Lady Wentworth," 900 tons; "Godiva," Hull and Newcastle-on-Tyne, 200 tons; "Henriette," South Shields, 900 tons. Total, 3550 tons. We have had also 30 tons from Puget Sound. The price of pig in this market to-day, English pig, is \$23 per ton. Previous to the present year the importation of English and Scotch pig iron to this market had sunk to almost a vanishing point. From the present looks of things it would seem as if our consumption of foreign iron would be very large next year. The Minaret mines will supply the ore for the manufacture of rods for some of our wire and cable business, but of this more anon. Had the owners of the Minaret claims been in a position to have gone to work this year they would have found a good market for their product.

There have been considerable imports of iron, steel, hardware, &c., by the Panama steamers "City of Sydney" and "City of Panama." The "General Mellinet" from Antwerp had 695 steel beams for some of our sky scraping office buildings. This is the second consignment of the description that we have had recently. The great demand for iron and steel products for the past year has thus extended its benefits to Great Britain and little Belgium, and there will be many a consignment from both before the end of the coming year. There is at present what may be termed a rage for putting up tall buildings in this city. The old style office building is passing away, and so also is the old style hotel.

The city is in a ferment just now, on account of the bid of Hill for transporting troops, &c., to the Philippines. This trade has been a great benefit to San Francisco, and is estimated to have been about \$25,000,000 a year. The head of the organizations of commercial men who are fighting the attempt of Hill to turn away the business from the city is A. A. Watkins of the firm of W. W. Montague & Co. And without any disparagement to business in other lines I must say that the hardwaremen have always taken the lead in every movement intended to benefit the trade interests of the city.

The export movement in hardware, &c., has been of considerable proportion, but more of that in my next.

J. O. L.

E. Baerwald, manager of the New York office of A. M. Crane & Co., Incorporated, Chicago, has been elected a director of the company.

# The Iron Age

New York, Thursday, December 18, 1902.

DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHERS.
CHARLES KIRCHHOFF,	- - - - -	EDITOR.
GEO. W. COPE,	- - - - -	ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR.
JOHN S. KING,	- - - - -	BUSINESS MANAGER.

## The Financial Situation.

The past week has again been a period of anxiety in financial circles. It had been expected that by the middle of December the demand for money for moving the crops would so greatly diminish as to materially relieve the situation. But the crop movement began later than usual, this relief has not occurred, and consequently money has been tight and renewed liquidation has taken place in the stock market. Prices of securities have fallen still lower and in some instances industrial stocks sold at lower prices than for years, except on the occasion of the memorable stock panic on May 9 of last year. This liquidation caused much uneasiness among business men generally, as it was feared that it might continue until some serious failure was precipitated, in which event capital would show its proverbial timidity and worthy enterprises would suffer.

It is to be hoped that this period of apprehension is now safely past. Efforts had been made to improve the situation by such expedients as the payment of interest on bonds in advance of the legal time by quite a number of companies having interest falling due on January 1, but the relief from this source would have been slight. On Monday, however, vigorous measures were taken by the leading New York banking interests, who pooled their issues and provided an emergency relief fund of \$50,000,000 for the purpose of preventing unnecessary sacrifices of values during this period of stringency and to keep interest rates within reasonable limits. This action was sufficient to restore confidence as soon as it was announced. The lower prices now ruling on all securities will at the same time require a smaller amount of capital to carry them than when they were selling at the much higher prices prevailing a month or two since. The lowering of values in this way, although entailing considerable loss on a large number of people, operates automatically in hastening the approach of the time when financial conditions generally must improve.

The fact is not to be overlooked that a resort to such an extraordinary measure as the formation of this pool of banking interests discloses a more serious condition than many had anticipated. While it averts all fear of a panic, yet it operates at the same time as a danger signal of the most striking character to those who are embarking in enterprises which will require a great deal of capital to put them into profitable condition. The wealth of this country has been assumed to have been so heavily increased during recent years as to be equal to any strain. This is shown to be fallacious. Germany only two years since laughed at the possibility of a depression, and we can profit by her experience.

If this period of liquidation is tided over safely it will undoubtedly have exerted a wholesome effect. Something of this kind was needed to check extravagant speculation in securities and to put a stop to the continuous exploitation of speculative undertakings re-

quiring a large amount of capital. The wild rush into new schemes, if not checked by this sort of pressure, creating timidity among investors, would unquestionably terminate in a sudden and serious catastrophe like the panic of 1873, which followed a great boom. This would be a much more serious matter than the gradual process of liquidation which has been experienced during the past few weeks. A moderate check to general business would also be wholesome. The business of this country has for months been under high pressure and the ordinary channels of distribution have been choked. It would be much better for all concerned if some reduction should be made in the volume of business, which would restore conditions to something like a normal state. We have already seen the indications of a lowering of the level of values on iron and steel products. Quite a number of undertakings which had been projected are now being deferred until either a lower basis of values is established or until material can be secured with a greater degree of promptness. If general trade can thus be brought to a more satisfactory basis by easy stages and not through a violent financial disturbance, it will be well for the country. This may not be satisfactory to the speculative element, but the majority of business men are not speculators.

## The Decline In Silver and the Metal Trades.

During the last few months the world's markets for silver have been attracting general attention from the fact that some extraordinary records in low prices have been made. The value of the ounce has fallen as low as 48 cents. In spite of these developments there has not been more than languid comment on the situation in this country, because it now affects only a relatively narrow range of our interests. The silver question, once the all absorbing topic of discussion, is dead beyond resurrection. Still the fall of the once precious metal does tell, notably so far as our business relations are concerned, with those countries which are still on a silver basis. Conspicuous among these of course is Mexico, whose shipments of silver and gold amount to about one-half of its total exports, gold figuring in them only in a minor extent. The purchasing power of the silver countries is, of course, adversely affected. Besides this, we have troubles of our own with the silver basis of the Philippines.

To the metal trades one effect of low silver prices is important, which is rarely dwelt upon in the discussion. It concerns both lead and copper. To a very large extent the mines which produce these metals yield silver also. It is evident, therefore, that lower returns from the precious metal must affect the capacity of the mines to market the baser metal. In other words, broadly speaking, a fall in silver should be reflected in a curtailment of output of lead and copper, and, other things being equal, an upward tendency in prices.

Turning first to lead, with the purpose of examining the status more closely, we find that in 1901 out of an estimated production from the mines of the United States of 270,700 net tons, 67,200 tons were derived from the ores of Missouri, Kansas, Wisconsin and Iowa, which do not contain appreciable quantities of silver. Therefore 203,500 tons were drawn from mines in the Rocky Mountain region, which yield both lead and silver. The smelters also treat large quantities of so-called dry ores, containing no lead, and it is upon the smelting of these that they have chiefly depended for their profit. For years they have paid very high prices for the lead in the ores rich in that metal, so that a lessened demand



for them would considerably curtail the supply and thus bring cost closer to the artificial figures which have thus far been maintained by the consolidated smelting interests. We are not in possession of figures which show how large a share of the whole silver production of the United States passes through the smelting furnaces of the American Smelting & Refining Company outside of that which is extracted by copper producers, but it is a well known fact that the silver extracted in the old amalgamation mills is relatively very small in quantity.

The copper mining industry is also affected to some extent by the decline in silver. The Lake Superior mines, which in 1901 produced 156,000,000 pounds out of a total for the country of 602,000,000 pounds, yield silver in negligible quantities. But Montana, with its output of 230,000,000 pounds of copper, does depend for its revenues to some extent upon silver. Just how large the quantity is we do not know. An indication is furnished, however, by the earlier annual reports of the Anaconda Mining Company. In the three fiscal years 1895-1896, 1896-1897 and 1897-1898 that company sold 341,343,039 pounds of copper and 16,262,004 ounces of silver at prices declining from 67.91 cents per ounce in the first year to 64.08 cents in the second year and 56.73 cents in the third year. If the average silver contents of the Montana ores were the same, the production of the camp would have been 11,000,000 ounces in 1901; so that the decline since the earlier days means quite a good deal to the copper producers. All the Utah and Colorado product, aggregating 30,000,000 pounds in 1901, is also argentiferous and is also affected. Some of the Arizona copper mines also carry silver.

In times of low prices for copper, like the present, the low value of silver has an appreciable effect and is a factor which should not be wholly neglected.

### The Eight-Hour Day.

Organized labor seems to have made up its mind to press for an eight-hour day until it is conceded and becomes the established custom of our industrial system. In many trades the movement in that direction has been practically successful; among others, in some in which the piece price system prevails. In some it has been established by arbitrary rule of the unions, confirmed by legislation. The leaders of the labor movement lose no time in moving for the eight-hour limitation whenever opportunity offers. An example of this is furnished in the case of the "hold up" of the franchise asked by the Pennsylvania Railroad to build a tunnel across New York and establish its main passenger terminal in the center of the city. In every legislature and at every session bills aiming at this result, directly or indirectly, are introduced and pressed. Now Congress is besieged along the same lines, and a bill requiring all who do work for the Government to operate their plants on the eight-hour plan is being urged industriously. The forces behind this movement are well organized, tirelessly industrious and admirably persistent.

The issue is not difficult to predict. Sooner or later we shall have the eight-hour day as the recognized standard in American industry. Its attainment will either be by a protracted struggle, which will be exceedingly costly to both sides, or by mutual agreement. The latter would seem to be the cheaper plan, and we commend it to the thoughtful consideration of all in interest.

The arguments for and against the eight-hour day are familiar, but may be briefly reviewed to make the position clear. Labor's contention is that a longer period

of continuous industry than eight hours imposes upon the average man a greater strain than he can carry continuously and have enough strength left to develop the intellectual and moral sides of his nature and become a good citizen. There is something in this. His labor is rapidly becoming specialized and is more and more monotonous, as one after another of the operations which formerly devolved upon the skilled mechanic are performed by machinery. He is also under a constantly increasing tension, owing to the fact that his pacemaker is no longer a human being like himself, but a machine which does not become tired and can maintain until worn out the standards for which it is adjusted. From many causes the productiveness of a man is steadily increasing, which means that his work is becoming more and more exacting. This fact is recognized in many trades, and in consequence of such recognition the day's work has already reached or is steadily approaching the eight-hour standard. The many sentimental arguments advanced in support of the eight-hour proposition doubtless help to shape public opinion, but they are not of sufficient consequence to be taken account of in a serious discussion. They may be brushed aside with the general statement that up to this time the men who have made best use of their opportunities and risen most rapidly from the bottom of the social scale to the top have not, as the rule, been those who have had most leisure or the easiest opportunities for self improvement. This, however, proves nothing. It may be accepted as a sound prediction that the intellectual progress of the wage earning class will be more rapid with shorter than with longer working hours. Probably the strongest argument in favor of the eight-hour day is that the wage earners want it and are determined to have it.

The argument against the shortening of the hours of labor are logically no better than those in favor of it. The employers hold that a reduction of the average working day from ten hours to eight means a serious curtailment of production, and if wages are not reduced proportionately the cost of production will be increased correspondingly. It depends a good deal upon the nature of the work, no doubt, and somewhat upon the season of the year. In winter the last two hours of a ten-hour day are not worth two hours of daylight, and perhaps not worth one. In summer they may be worth more than two midday hours, but not as much as two morning hours. Taking the average of the year, it is by no means certain that if labor was disposed to do the best it could the loss of production due to a reduction of the standard work day from ten or nine to eight hours would be attended with any appreciable reduction of output or increase of cost. The fact that this point can only be determined by the test of experience makes the employer conservative and prompts him to assume a defensive attitude in relation to the eight-hour movement.

The most serious of the difficulties in the way of agreement on this subject between employers and wage earners is found in the recognition by both sides that the consent of all in interest to the trial of the experiment of the eight-hour day cannot be obtained. This imposes a serious difficulty in the way of a beginning. In the discussion at the recent public meeting of the Industrial Committee of the Civic Federation the ground taken by many who spoke for the manufacturers was that if the change could be universal no ground for objection would remain. It must begin by the acceptance of the eight-hour day by all the employers of an industry, for the reason that if some accepted it and others

did not the advantage would appear to be overwhelmingly in favor of those working their plants ten hours and competition with them would be impossible. This view was also voiced by the opponents of the eight-hour bill now before Congress. Judge McCammon, representing the shipbuilders in the discussion before the committee of the House, expressed it very clearly as follows:

" . . . in presenting the final argument on behalf of certain companies and individuals, it seems incumbent upon me to disclaim any opposition either to the theory of those who advocate an eight-hour system or to the practical application of an eight-hour system where the consent of various trades and manufacturers which produce the same or similar articles is unanimous. This consent must of necessity be practically unanimous or universal, else the advantage must be with the establishment which employs men to work 10 or 12 hours in producing substantially the same product as those working shorter hours. Our opposition is to no theory, to no principle, but is directed to the vicious attempt to compel a contractor to be placed at a disadvantage in connection with producers in the same line of business if the bill under discussion should become a law."

*Prima facie*, this argument is unanswerable, and it might be indefinitely extended. For example, it is held with equal force that if this country should adopt the eight-hour day it would be handicapped in international trade by the competition of countries not yet ready for the change. The representatives of labor contend that no such result would follow, for the reason that the output of the eight-hour day would equal that of the present ten-hour day, since for eight hours a man can work at his best, whereas if he is filling a ten-hour day he must of necessity save his strength and husband his energies to carry him through it. Here we have a question of fact which can never be answered by discussion, but awaits demonstration.

It is indisputable that in many trades controlled by unions production is restricted partly by union rules and partly by tacit agreements among workmen. "Go canny" is not confined to England. From the viewpoint of the employer no question of principle is involved in the eight-hour discussion. It is in the highest degree practical, and the opposition to it would largely evaporate if the grounds for it were shown to be fallacious. Many employers are perfectly willing to introduce the eight-hour day under perfectly fair conditions of reciprocity, and some are sufficiently adventurous to make the experiment on small encouragement. This being so, why might not organized labor offer to the liberal minded employer the proposition to demonstrate for, say, three months the truth of the contention that it would not place him at a disadvantage to adopt the eight-hour day, and that he can do it without waiting for the practically universal concurrence which has been represented to him to be the condition precedent to safe individual action? Suppose the men employed in a representative establishment should say to the proprietor: "We want the eight-hour day. We do not however, want to ruin you, and we perfectly understand that if we place you at a disadvantage in competition for business not only will we lose our own jobs, but we shall have established an unanswerable argument against the eight-hour system. Consequently we make you this proposition: Taking present average output as the standard of what is satisfactory and profitable to you, and present cost per unit of product as low enough to enable you to meet competition, we promise if the eight-hour day is given a three months' trial to demon-

strate the fact that your production will not diminish per unit of labor cost nor the labor cost increase per unit of production. We will agree to such modification of our rules as will render the change advantageous to you as well as to ourselves. If we establish our contention you agree to continue the eight-hour day permanently; if we do not, we agree to return to whatever is the standard day in our trade. We will look after your competitors and will protect your interests against injury from any cause for which labor is responsible. Let us through a joint conference committee arrange the basis of such an agreement and carry it out on both sides in good faith."

This offers opportunity for deciding what promises to be a protracted, increasingly bitter and generally profitless discussion, in which labor seems to have the advantage of a well organized propaganda and a potent influence in legislation. Their unwillingness to show that the material interests of the country would not suffer from the change they demand would furnish the best possible argument why such demand should be refused and resisted to the end of every expedient to defeat it.

### The Republic Iron & Steel Company.

Alexis W. Thompson, president of the Republic Iron & Steel Company, is reported to have made the following statement:

"Our statement for the half year ending December 31 will be issued about January 20. The only thing that is hindering the company is the car shortage. Prices of billets remain firm and there will not be any diminution in prices for at least six months, as 25 per cent. of the blast furnaces in the Pittsburgh district are idle on account of a shortage of coke. The demand is still good and we have all we can take care of up to next July. The cut in prices on certain products authorized by the United States Steel Corporation has no bearing on our business. Net earnings of the Republic Company for the first six months of the year were \$1,840,527."

Relative to reports to the effect that the Republic Iron & Steel Company would move some of their plants to Youngstown, Ohio, A. W. Thompson, president, made the following statement:

"We do not intend, nor ever thought of moving our plants at Gates City and Birmingham to the Youngstown district, and I cannot imagine how such a report originated. We do not intend to take any of our Western mills to the Youngstown district, as almost all of them are well located in reference to cheap fuel and nearness to the markets of the West. They will be operated in the same manner as at present. The two 5-ton converters at the Bessemer steel plant will be substituted by two 10-ton converters. The company have contracted to install a new blowing engine, new reversing engine and new blooming mill commensurate with the increased converter capacity, all of which will probably be done during the coming year. In regard to the reported purchase of a tract of land on the south side of the Mahoning river, near the plant of the National Tube Company, it can be said that no definite arrangements have been made to buy it."

**Coal Briquetting Project.**—Negotiations are pending for a site along the Delaware River, at Chester, Pa., by the Perfect Fuel Company, who will erect a plant for the manufacture of coal briquettes, a substitute for anthracite coal. The process under which the company will operate is that recently patented by Dr. Henry W. Morrow of Wilmington, Del., who is a practical chemist of more than 30 years' experience. Demonstrations of the process have been made within the past few months before interested persons in Pittsburgh, Philadelphia and various other cities. The fuel is made partly from clean, fine coal as it comes direct from the washeries.



When ready for shipment it will be in the form of 3-ounce briquettes, compressed to a degree much harder than anthracite coal. The cost of manufacturing it is claimed will not exceed \$2.52 for a ton of 2240 pounds. The Perfect Fuel Company organized October 25, 1902, in Wilmington, Del., under a Delaware charter, with a capitalization of \$1,000,000.

## Insurance Inspection.\*

### Its Importance to the Manufacturer.

The introduction of complicated apparatus as a means of protection against fire and the use of hazardous materials in manufacturing processes have made it necessary for proper and careful inspection, and the result has been the formation of bureaus having for their special object the proper and systematic supervision of factory risks. The Inspector can be consulted at any time upon any and all subjects relating to fire appliances, hazards in machinery and special hazards in the manufacturing process. Among them I note the installation of automatic sprinklers, yard hydrant and pump service, installation of any of the various gas machines for light or power, installation of a thermostat or automatic electric alarm system, installation of an electric system for light or power and devices for safely handling gasoline, naphtha, rubber cement, celluloid, japans, lacquers and other compounds. The testing of such other materials as might endanger property with a view to their proper care and safe handling, and the readiness with which the manufacturers generally accept the conclusion of the inspector, are evidence that the inspection bureaus have their confidence.

#### Location of Sprinkling Systems.

In considering the matter of fire protection a complete and modern system of automatic sprinklers has been found to be the most efficient in preventing the spread of fire. But sprinklers to be effective should be placed throughout the premises, including basements, lofts, under stairs, inside elevator wells, in belt, pipe, gear and pulley boxes, and in small inclosures such as drying rooms, heating boxes, chutes, conveyors and closets. Experience has taught the Inspector that sprinklers are often necessary where seemingly least needed. Their protection is required not alone where a fire may begin, but also wherever any fire might extend, including wet or damp locations; but if buildings have air spaces in partitions and ceilings and vertical drafts without cut off, fire may originate in such a way and spread in such a manner that the heat would generate water into steam so rapidly as to cause a total destruction of the property.

#### Care of Sprinklers.

Experience has also taught us that, owing to the negligence of employees who are responsible for the care of the equipment, post indicator valves outside of a building where they can be frequently observed are an essential feature for safety, and in a plant where such places cannot be heated the installation of a dry pipe equipment should be required. Considering that the sprinklers fuse at a temperature of 155 degrees F., the Inspector must know of the location of the processes relative to the heat used, and promptly inform the assured of any change in sprinklers made necessary by the change in location of the manufacturing processes, for the inspectors endeavor to keep correct records and plans of all manufacturing plants under their supervision. It is therefore of the utmost importance, as a matter of economy and safety, that no change be made in construction or of sprinkler piping without consulting with the inspector, whose services can be procured upon application and without cost to the manufacturer.

#### Causes of Troubles with Sprinklers.

In many cases sprinklers have been a failure, for, by reason of imperfect equipment, an explosion may cause a fire too intense to be subdued. Fire occurring in an

unsprinkled part of a plant may result in the total destruction of the property. A fire originating in an unprotected belt or stair tower might result in the total destruction of the property. Fires have occurred about hot boxes and spread so rapidly as not to be subdued by sprinklers. In many cases fires have originated in closets and unprotected places which have been promptly checked when reaching sprinklers. Blower systems in operation near where a fire originates spread sparks to all parts of plant. Lack of proper care in keeping automatic hatches and stair doors in order have resulted in the rapid spread of fire and heavy loss before the fire would be checked by sprinklers. The fine washing or painting of sprinklers has resulted in heavy losses for this reason of neglect. Fire pumps improperly connected with boilers have resulted in disastrous fires. In my experience I have found sprinkler pipes choked with stones which have worked their way in from the public lines. Sprinklers have been maliciously removed, the openings plugged, and the sprinklers returned to their proper place, pipes disconnected and put together by flanges with rubber packing, which covered the whole opening, thus preventing circulation, and many removed, thus injuring the equipment. Sprinklers that I have found inoperative by reason of valves at risers being closed have been numerous, and equipments cut off by valves partially closed for the reason of the mistaken idea that closing a valve would reduce the water pressure.

#### Special Hazards.

In the matter of hazards nitric acid causes much trouble. Lately such acid has been packed in cork, but when packed in the carboy with hay, leaks or breakages result in fire. The storage of acids and ammonia in large quantities in factories is discouraged, not because the latter is dangerous as a fire hazard, but because of the stifling nature of the liquids, thus preventing the entrance to buildings by firemen in case of fire.

Benzine, the most dangerous of the liquids in common use and largely used in various processes, has been the cause of many fires. A given volume in liquid form is capable of conversion into sufficient vapor 8500 times the volume of atmospheric air, and this inflammable atmosphere coming in contact with an open light will convey flame a long distance from its source. In all places where this liquid is used care should be taken that no flame for lighting is used, and if electric lighted, no lamp to be fused or cut out should be allowed in the room.

Naphtha and other products of petroleum, evaporating at a low temperature, are exceedingly dangerous to have inside of a factory. The gas mixed with air forms a heavy vapor, which in a cold room will lie undetected near the floor, and coming in contact with a flame cause an explosion. Lacquers used in metal working establishments having a low flash point have been the cause of many fires. The lower the flash point the more likely is the atmosphere to be impregnated with the inflammable vapor liberated by the heat of the room. These are found under the names of enameloid, zapor, branoline, krystaline, obelisk, lastina, pyramid, adamantine, albaline, colophite, having a flash point varying from 18 to 116 degrees F.

#### Spontaneous Combustion.

Damp lampblack will ignite from the sun's rays. The same can be said of cotton waste moist with lard or other animal oil. Lampblack and a little oil or water will under certain conditions ignite spontaneously. Nitric acid and charcoal create spontaneous combustion. New printers' ink on paper when in contact with a hot steam pipe will ignite quickly. Boiled linseed oil and turpentine in equal parts on cotton or linen rags or cotton waste will ignite in a few hours under a mild heat, and will in time create enough heat to ignite spontaneously. Bituminous coal should not be stored where it will come in contact with wooden partitions or columns or against warm boiler settings or steam pipes. This coal should not be very deep if it is to be kept on storage for a long period. If piled in the basement of a building it should be shallow and free from moisture, and under good ventilation. That liable to

\* Address by James H. L. Coon, Insurance Inspector, Watertown, Mass., before the New England Foundrymen's Association, Boston, December 10, 1902.

absorb moisture should be burned first. If on fire a small quantity of water showered on this kind of coal cokes it upon the top and retards any great supply of water reaching the fire, thus necessitating the overhauling of the pile.

Iron chips, filings or turnings should not be stored in a shop in wooden boxes. The oily waste which is not infrequently thrown among them adds to the danger of fire from this source. The sweepings from the machine shop, if kept on hand, should never be placed over iron shavings. This mass of disintegrated iron is enough to incite heat and combustion. Iron and steel filings and turnings when mixed with oil will ignite spontaneously after becoming damp. A steam pipe against wood will cause the latter to ignite spontaneously after being carbonized, particularly if superheated steam enters the pipe, thus increasing the heat temperature. Steam heat apart from its contact with water forms a gas.

#### Periodical Inspection.

Persistent watchfulness being the greatest safeguard against the breaking out of fires, it is important that in a manufacturing or other large establishment a system of periodical inspections be carried out by the manager and a regular inspection by a competent man, one who is likely to persevere in its supervision. With most men immunity from fire occasions a feeling of security and consequently after a few months of careful attention to duty men fall into negligent and perfunctory habits. A daily inspection is not too frequent and will pay for itself ultimately. Every part of the premises should be looked after, particular attention being given to the following:

1. The line of every steam pipe should be carefully followed and it should be ascertained that no part of it is in contact with wood, and that no cotton waste or other inflammable substance is near it.

2. The surrounding of every steam boiler, stove or other heating apparatus should be examined, all inflammable material removed from the vicinity and defects in smoke flues or flue connections or supports should be noted and reported.

3. The open spaces beneath benches, tables and wide shelves and in inclosed belt boxes should be examined for inflammable materials and the same removed, and the attention of any person responsible for leaving such material in dangerous position be called to the matter.

4. All places where oils, varnish, lacquers, japans or naphtha, &c., are used or stored should be particularly examined and every precaution taken against fire. Special care should be taken against leakage of these inflammable materials, to see if any cotton waste or rags or other substances liable to combustible ignition when fouled with oil have been left lying outside of their proper receptacle. The condition of the yard should have attention and no accumulation of inflammable materials should be allowed against buildings.

5. A careful examination of fire equipments should be made. Every part of the apparatus should be examined and anything whatever missing should be promptly reported; also that all valves are properly secured open and that all elevator hatches and stationary doors are in good condition.

These notes are general in their application, but every establishment is liable to some special risk belonging to its class, and the inspector's attention assigned to this work should be called to any special hazard pertaining to the manufacturing processes. Upon the conclusion of each report the inspector should fill out a blank provided for the purpose, giving particulars of the state of the establishment and submit such report to the manager.

At the regular meeting of the New England Railroad Club, at the Pierce Hall, Boston, on December 9, a paper on "Electrically Driven Shops" was presented by Robert L. Warner, Boston sales manager of the Westinghouse Electric & Mfg. Company. Mr. Warner's paper was illustrated by a large selection of stereopticon views, showing many examples of the application of direct current and induction motors to the driving of machine shop tools and other apparatus.

## OBITUARY.

H. R. BISHOP.

Heber Reginald Bishop died at his home in New York December 10 of aneurism of the heart. He was born in Medford, Mass., on March 2, 1840. He received his first business training in Boston; and having become familiar there with the sugar business, he went to Remedios, Cuba, in 1859. Two years later he established there the sugar refining and exporting house of Bishop & Co. During the insurrection of 1873 he converted what he could into cash and returned to the United States. Here he became largely interested in railroad, gas, iron and other properties, and in connection with Benjamin Brewster and others he formed a combination for the construction of the Third Avenue Elevated Railroad. His attention was, however, diverted to Western interests and he became a director in the Chicago, St. Paul, Minneapolis & Omaha Railroad, the Chicago, Rock Island & Pacific Railroad and the Duluth & Iron Range Railroad. He became one of the organizers of the iron properties in the vicinity of Duluth, and was a director in the Minnesota Iron Company, the Chandler Iron Company, the Lackawanna Iron & Steel Company and in the new Lackawanna Steel Company. He was also a director of the Metropolitan Trust Company and identified with other corporations.

#### NOTES.

GEORGE W. VAN TINE, superintendent of the foundries of the Singer Sewing Machine Company, Elizabethport, N. J., died of heart disease on December 12, aged 53 years. He was the inventor of the Van Tine molding machine. He had been in the continuous employ of the Singer Company since 1877.

WILLIAM S. JENKS, president of the Jenks Shipbuilding Company and one of Port Huron's oldest residents, died December 12 in the company's office at Port Huron, Mich. Mr. Jenks was 84 years of age.

GEORGE W. PRESCOTT, one of the founders of the Union Iron Works, died of heart disease at San Francisco on December 12. He went to San Francisco from Maine in 1850 and in 1875 formed the shipbuilding firm of Prescott, Scott & Co., who later became the Union Iron Works.

WILLIAM T. BLACK, a retired stove manufacturer, formerly a member of the old firm of Black & Germer, died at Erie, Pa., on December 12, aged 73 years. He also founded the Black Mfg. Company, makers of the Tribune bicycle.

JOSEPH H. JOHNSON, who, for the greater part of his life, was engaged in the foundry business at Paducah, Ky., died on December 8, at his home in that city, aged 73 years. He was born in Pittsburgh, Pa., and went to Paducah when a young man. He was mayor of the city from 1889 to 1901.

**N. & G. Taylor Company Lease the Maryland Mills.**—N. & G. Taylor Company of Philadelphia, who have been largely interested in the Maryland Sheet & Steel Company of Cumberland, Md., have leased this company's plants, the change taking effect on January 1 next. This property is a very extensive one, comprising open hearth furnaces, plate mills, sheet mills, foundry and plant for the manufacture of harrow disks. They will operate the works on a more extensive scale, doubling the output of sheets and washers, and expect in the near future to add one or more open hearth furnaces of sufficient capacity to also supply their black plate mills adjoining this property with all the tin bars they use. For this purpose a new bar mill will be erected. James B. Strawbridge, who for many years past has been the general superintendent of the various steel works at Middletown, Ohio, will on January 1 move here and become general superintendent of the plant. N. & G. Taylor Company have been running their black plate mills uninterruptedly and continuously for the last three years with which to supply their tin plate works at Philadelphia and they have in contemplation the adding of two more mills, giving them a ten-



mill plant and, of course, necessitating the addition of corresponding finishing ends. They will employ some 800 men in the two plants, the annual pay roll running close to \$500,000, with an output reaching nearly 50,000 tons annually of their different products. The firm have a very complete tin plate works in Philadelphia using 26 tinning stacks.

## Trade Publications.

**Railway Specialties.**—The Federal Supply Company, whose offices are located in The Rookery, Chicago, have issued a very attractive leaflet describing the Federal tie plate. This plate is of rolled high carbon steel, having the top covered with bosses of uniform height and having the sides slightly turned down. On the bottom of the plate there is a deep flange, designed to enter the tie parallel to the fibers of the wood. The bosses prevent direct contact between the rail and the main body of the plate, avoiding sand wear and allowing the escape of grit in all directions and not along a channel only. The central flange forms a deep girder beneath the central part of the plate, giving it strength and stiffness. The beveled edges press into the wood and prevent sand and water from destroying it by being drawn between the plate and the tie. Another bright folder issued by this company describes and illustrates the Wolhaupter rail joint.

**Boiler Cleaners.**—A very complete line of trade literature relative to their boiler tube cleaners is issued by the Gem Mfg. Company of Pittsburgh. Besides leaflets showing illustrations and describing their Impulse and Union cleaners, they have a series of circulars reproducing reports on tests of boilers after being cleaned, as well as circulars naming prominent users and testimonials. As the cleaners are made of duplicate parts, another circular gives illustrations of the various parts, designating them by numbers, so that duplicate parts may be obtained quickly. The tests referred to show very flattering results for the Gem cleaners, as they were made directly after the boiler tubes had been cleaned by other methods. The results of the final tests, it will therefore be understood, were obtained on what had been accepted as cleaned tubes. These tests were made by the engineers in the employ of the users of the boilers. A large percentage of efficiency was obtained after the final tests made with the Gem cleaners.

**Chucks.**—Scott & Sons Company, builders of machine tools, Boston, Mass., issue a special leaflet illustrating and describing their Alligator chuck as applied to turret lathes. The chuck allows for the finishing of a piece of work, having from one to eight ends, without stopping the lathe after the work has been inserted. The Alligator chuck differs from the ordinary chuck, both in form and operation. It can be applied to any turret lathe having a hollow spindle with a thread on the front end and a swing of 14 or more inches. It is specially designed for manufacturing goods that have more than one end which require finishing, particularly those in which a common center can be obtained for all the ends, as, for example, globe valves, stop cocks, bibs, gas cocks, pipe fittings, &c. Another leaflet issued by this company gives particulars regarding their S. & S. screw cutting die, which is self opening, adjustable and nonclogging. This die is designed for use on turret lathes and screw machines on which the turret is operated by hand.

**Prospecting and Mining Outfits.**—An interesting mining booklet is issued by the Edson Mfg. Company of Boston, Mass. It is chiefly descriptive of the Edson prospecting and mining outfit, which is made as light as possible, so that it may easily be transported by pack in undeveloped territories, which are inaccessible otherwise than by foot. A series of novel illustrations shows how the apparatus is transported and operated in wild mining sections. Directions for ordering the outfits and duplicate parts are given. A list of users and reproductions of testimonials are also given, as are also data regarding their diaphragm lift and force and mining and trench pumps. As it is frequently necessary to order the apparatus covered by the booklet from great distances a very complete code system is explained.

**Tool Room Grinder.**—H. C. Barr of Worcester, Mass., takes as a subject for a four-page folder his Universal tool room grinder. This machine has a number of special features which are outlined concisely in the folder. Reference is also made to 17 styles of sensitive drilling machines and special machinery built at the Worcester plant.

**Internal Furnace Boilers.**—The Springfield Boiler & Mfg. Company of Springfield, Ill., have prepared a novel publication which they call "Our Sketch Book." It is issued in pamphlet form, 7 inches wide by 16 inches long, and consists entirely of drawings showing the adaptability of internal furnace boilers; the many modifications in design to which they are susceptible; the large amount of

power that can be developed in a limited space; their accessibility and other features which it is calculated will prove of interest to mechanical engineers.

**The Manufacture of White Lead.**—The Sterling White Lead Company, whose principal offices are in the Empire Building, Pittsburgh, are sending to the trade a very interesting booklet, called "The Story of Sterling White Lead." This "Story" is a description of the old Dutch process of making white lead, and the Sterling Company emphasize the fact that their lead is made by this process. Under the style of "Another White Lead Story," the paper read before the chemical section of the American Association for the Advancement of Science at the Pittsburgh convention last July by Gerard Otto Smith is reprinted.

**Steam Engines.**—A catalogue by the Providence (R. I.) Engineering Works describes the improved Greene steam engine. These engines embody the most modern practice, as well as the highest grade of material and workmanship. They are particularly adapted for work of an exacting kind, where close regulation and economy are prerequisites.

**Traveling Cranes.**—We have received from the Whiting Foundry Equipment Company of Harvey, Ill., a very complete catalogue illustrating and describing their various types of traveling cranes. They regularly manufacture four types of electric traveling cranes—namely, three-motor for ordinary shop or yard service, in capacities from 3 to 75 tons; four-motor, same as the above, but usually of larger capacities and with an auxiliary hoist on the main trolley for the rapid handling of light loads or in connection with the main hoist for tipping ladles; double trolley cranes for handling lengthy loads, in which the two trolleys may be of different capacity, and bridge hoist cranes in which the hoist is stationary on the bridge. The latter is usually made with two hoists operated in unison. It has capacities up to 50 tons, and is used for handling skelp or pipes, merchant bars in full lengths, &c.

**Wire Rope Tramways.**—The 1903 edition of "Wire Rope Tramways" by the Trenton Iron Company of Trenton, N. J., pays special attention to the merits of the locked coil track cable and the Webber compression grip, with automatic attacher, the merits of which have established the superiority of the Bleichert system. Many engravings are presented showing the application of this system to large works. One view illustrates this tramway at the Vivero Iron Ore Company, Spain, which has a length of line of 625 feet and an hourly capacity of 250 tons.

**Thread Milling Machines.**—A pamphlet by the Pratt & Whitney Company of Hartford, Conn., describes their thread milling machine, which possesses practically all of the flexibility and adaptability to miscellaneous thread cutting of the engine lathe, and at the same time does work within narrower limits of error than any ordinary engine lathe can. It is designed for the manufacture of precision screws, worms, lead and feed screws and spiral gears for high grade machine tools; also for threading on other work, such as rock drill feed screws, temper screws, thrust screws for friction hoisting drums, valve stems and the like, in which low cost of manufacture is a prime consideration. Two sizes of these machines, differing only in length of bed, are regularly made. The beds are 3½ and 9 feet long, with capacity for threading screws 14 and 80 inches long, respectively. The maximum diameter of screws threaded, or spiral gears that can be cut on each is 6 inches.

G. E. Hall of 211 Centre street, New York, is sending an attractive folder exploiting Hall's mineral machine oil to the trade. Inclosed with the folders are nicely printed post cards, upon which historical and other interesting news is printed.

Frank Toomey, 127-131 North Third street, Philadelphia, has just issued a revised list of the second-hand rebuilt machinery which he has in stock ready for immediate delivery.

A desk blotter printed in two colors and giving data regarding the narrow gauge railway materials, wooden and steel cars, rails, frogs and switches, &c., manufactured by Arthur Koppel of 66 and 68 Broad street, New York, is circulating in the trade.

We have received a series of large half-tone engravings illustrating some of the Rice & Sargent engines built by the Providence Engineering Works of Providence, R. I. These engines include horizontal, simple and tandem, cross compound and vertical compound.

The Billings & Spencer Company of Hartford, Conn., have prepared a folder dealing with their drop forged trolley line material, consisting of strain insulators, insulating studs, single and double feeder clips, wire clips, hangers, &c.

Wyman & Gordon of Worcester, Mass., makers of drop forgings to order only, have issued a very attractive circular recounting some of the principal events in the life of John Ericsson. They have already published, in the place of a catalogue, accounts of Watt, Boulton, Fulton, Stephenson, Nasmyth, Bessemer, Siemens and Krupp.



## PERSONAL.

William G. Park, the well-known former steel manufacturer of Pittsburgh, has been made a director of the Lincoln Trust Company.

Charles M. Schwab, president of the United States Steel Corporation, will give a large sum of money to the poor in Braddock, Homestead and Duquesne at the holidays.

J. Holt Gates has retired from the presidency of the Electrical Equipment Company, contracting engineers, Monadnock Building, Chicago. J. W. Peterson has been elected president and will continue in the active management of the business.

Albert Ladd Colby, metallurgical engineer of the Bethlehem Steel Company, was among the passengers of the belated "Kronprinz," which reached New York on the 11th inst. He has been absent on business for the Bethlehem Company since August last.

Burton J. Ashiey, civil and consulting engineer, recently resigned as chief engineer in the founding of Zion City, Ill., to which work he has given his exclusive attention for the past four years, has opened up in business for himself again in Chicago in Suite 523, "The Temple." His time will be largely devoted to the examination and reports on public and private utilities and in lauding and developing town sites and colonies. He reports 8000 people now in Zion City at the end of 16 months.

R. R. Shuman, who for some years has been advertising manager of Joseph T. Ryerson & Son, has resigned to become a member of the firm of A. M. Crane & Co., Incorporated, Chicago. Mr. Shuman will be assistant secretary and will have the particular duty of developing the out of town business for A. M. Crane & Co., Incorporated, by modern advertising and mail order methods.

Geo. G. Blackwell of Geo. G. Blackwell & Sons, Limited, Liverpool, England, who has spent several weeks in this country and Canada visiting numerous customers, sailed from New York for home on December 13, with a full order book. He was accompanied by his wife and daughter.

Daniel W. Pedrick, one of the original founders of the Pedrick & Ayer Company of Philadelphia, Pa., is now giving his entire time and attention to the firm of H. B. Underwood & Co., in which he has been interested since their organization and is now the senior partner. This company manufacture portable cylinder boring bars and other portable tools for railway repair shops.

**The Tidewater Steel Company.**—Since the induction into office of C. E. Stafford as president of the Tidewater Steel Company of Chester, Pa., the plant has undergone many changes in the way of improvements over the methods formerly used. The new method of using molten metal, taken directly from the blast furnace to the open hearth furnaces at the works, has proved entirely successful under his direction and has been found to greatly increase their product, and at the same time lessen the cost of making steel ingots. A new Wellman charging machine has just been received, and when the machine is installed it will be used to charge the scrap and other material into the open hearth furnaces. The work of erecting a 90-ton Sellers ladle crane at the plant has just been completed. Men are engaged in installing the new electrical equipment, consisting of compound engines and dynamos in the new power house recently erected. The new open hearth furnace and blooming mill are rapidly nearing completion. Last month's sales were the largest in the history of the Tidewater Company, and the outlook for this month is that it will exceed that of the month of November.

The Pressed Steel Car Company of Pittsburgh have built since their inception about 80,000 steel cars, of which about 25,000 were built in the first 11 months of this year. Their output for December will probably reach 3000 steel cars.

## MANUFACTURING.

## Iron and Steel.

The Knoxville Iron Company, Knoxville, Tenn., manufacturers of bar iron, have dismantled their Harriman Mill, and the machinery has all been shipped to their new works at Knoxville, which will start up about January 1 with a very much increased capacity. Such of the machinery as is modern will be used, the balance being used as scrap iron.

The Cleveland Cliffs Iron Company are about to install an electric power distribution system for operating mixers and blowers in their plant at Gladstone, Mich. They have recently purchased from the Westinghouse Electric & Mfg. Company two 75 kw. direct current generators and eight 10 horse-power direct current motors. The Pioneer Iron Works of Marquette, Mich., owned by the Cleveland Cliffs Company, will also be equipped with electrical apparatus, which will be used for the operation of mixers and blowers as in the Gladstone plant. Apparatus recently purchased from the Westinghouse Electric & Mfg. Company for the Marquette plant includes ten 10 horse-power direct current motors and two 150 kw. engine type generators, to be direct connected to two Westinghouse compound condensing engines. The company have also ordered a Baldwin-Westinghouse electric locomotive, to be used for shifting cars in their yards.

The project to reopen the rolling mill of the Elmira Steel Company, Elmira, N. Y., is said to have been abandoned.

The officials and directors of the United States Steel Corporation, during their inspection of plants in Pittsburgh last week, visited the Monongahela Works of the American Tin Plate Company, on the South Side, for the purpose of inspecting the new equipment that is being built to these works for the purpose of rolling black plate at what is expected to be a very much lower cost. This new method is primarily the invention of Charles W. Bray, chief engineer of the American Tin Plate Company, and if it proves successful is expected to cut the present cost of rolling black plate more than half. The new equipment has not been completely installed, and it will not be known for some little time whether the new method is a success as anticipated.

The new skelp mill of the Wheeling Steel & Iron Company, at Wheeling, W. Va., has been placed in operation. Heretofore muck iron was made at the Benwood plant of the company and then shipped to the Belmont mill at Wheeling, but with the installation of the new skelp mill at the Benwood works the muck iron will be rolled into skelp before leaving the mill.

At the Sharon works of the National Steel Company, at Sharon, Pa., there were turned out in November 15,170 tons of open hearth billets. This is the largest output in any one month in the history of this plant.

The Morgantown Tin Plate Company have been organized at Morgantown, W. Va., with a capital of \$150,000. It is said the new company will erect a tin plate mill near Morgantown, on the line of the Morgantown & Kingwood Railroad.

The Sligo rolling mills, on the South Side, Pittsburgh, which were operated for nearly 75 years, are being dismantled and part of the equipment is being removed to the new works being erected at Connellsville, Pa. The greater part of the equipment in the old plant is being scrapped, having been sold to Koehler & Streng, scrap iron dealers, in Pittsburgh.

The Humbert Works of the American Tin Plate Company, at South Connellsville, Pa., are being dismantled and the equipment moved to other plants.

The mills of the Brown Bonnell Works of the Republic Iron & Steel Company, at Youngstown, Ohio, have been making some extraordinary runs during the past year, each succeeding month being larger than the previous one; but December promises to break all records for tonnage at these works. The first week of the present month there were produced of finished material 4000 tons, which was by far the largest output ever made in these mills, while on one day last week the output was over 900 tons. Since the company secured control of these mills they have spent considerable money on improvements.

It is stated that the output of the mills in the Youngstown, Ohio, district of the American Steel Hoop Company is 46 per cent. larger this year than for last year. Some extensive improvements are contemplated at these different plants and it is probable that two new continuous mills will be built next year at the Upper Union Works of the American Steel Hoop Company at Youngstown.

## General Machinery.

At Pittsburgh J. A. Atwood, chief engineer of the Pittsburgh & Lake Erie Railroad, has given a contract to W. F. Trimble & Sons for building the superstructure of new erecting and machine shop and power house building at the McKee's Rocks yards of that road. The erecting and machine shop will be 560 feet long and 170 feet wide. It will be of brick and steel construction, and the McClintic-Marshall Construction Company will erect the steel work. The foundation has been practically completed, and the erection of the superstructure is expected to proceed rapidly. In the machine shop there will be 78 machine

tools, including planers, lathes, axle lathes, slotters, drill presses, milling machines, &c. Each will be supplied with a variable speed electric motor. The erecting side of the shop includes 24 stalls. Following are some general dimensions: Boiler and tank shop, 100 x 275 feet; Storehouse, 75 x 100 feet; freight car shop, 150 x 650 feet; blacksmith shop, 74 x 200 feet; coach shop and planing mill, 120 x 300 feet; paint shop, 85 feet x 203 feet 2 inches; power house, 77 x 100 feet.

The American Blower Company, Detroit, Mich., have just received another order for forced draft apparatus from the Lehigh Valley Coal Company, this to be installed in the Prospect colliery, at Wilkes-Barre, Pa.

The large new plant at Barberton, Ohio, of the Pittsburgh Valve & Fittings Company, a Pittsburgh corporation largely controlled by men interested in the Pittsburgh Plate Glass Company, is to be started early next month. The new works will employ about 150 men, but this force is to be increased as the works are developed. During the past week the company, who laid out their mill site so that employees' houses could be built on either side, arranged to open a small town on their property, where employees could build homes. The company will not build the houses, but will provide lots for the men if they want them, and give all the conveniences necessary.

The American Foundry & Machine Company, Hanover, Pa., have purchased the plant they occupy, consisting of machine shop, foundry and pattern shop. Their intention is to rebuild the machine shop, which was burned a year and a half ago. The new building will be of the same dimensions as the old, 90 x 160 feet, and will be equipped with tools of the latest type. A new office building, including drafting room of two stories, will be erected, commencement being made as soon as weather will permit. The works are running full, the lines principally being automatic tobacco machinery and pulley molding machines.

The Anchor Machine Works, Grand Rapids, Mich., have established a shop for the manufacture of electrical and belt driven grinders and buffers and special machines.

The Gulf, Colorado & Santa Fe Railway Company are rebuilding the shops at Beaumont, Texas, which were destroyed by fire last October. They are also enlarging their shops at Cleburne to accommodate the additional machines which they found it necessary to purchase to take care of their increased business.

The Pipe-Friction Draft Gear Company of Pittsburgh have been organized. Identified with the new company are B. C. Vaughn, Robert L. James and Harry J. Graham.

The Central Pipe & Valve Company of Allegheny, Pa., have reorganized as the Central Pipe, Valve & Construction Company. It is the intention of the company to rebuild their present plant on River avenue in Allegheny, and install a large amount of new equipment, their present output being too small to meet their growing business. It is possible that they may decide to build an entirely new works at some other location, and several offers of sites are under consideration. In the reorganized company W. D. Corcoran, formerly of the Howe, Brown Works of the Crucible Steel Company of America, has been made president, and Houston Hall secretary.

The Chicago Pneumatic Tool Company, Chicago, Ill., report the business outlook very promising for the month of December, 1902, and the sales show an astonishing increase over those of December, 1901. The following is a partial list of those for whom they have installed pneumatic machinery during the past week: Townsend & Downey Ship & Engine Company, New York; Ross Iron Works, Brooklyn, N. Y.; Wm. Cramp Ship & Engine Company, Philadelphia, Pa.; American Locomotive Company, Schenectady Works, Schenectady, N. Y.; Shapley & Wells, Binghamton, N. Y.; Boston Bridge Works, East Cambridge, Mass.; Kensington Ship Yard, Philadelphia, Pa.; Ricard Boiler & Engine Works, Toledo, Ohio; C. E. Rogers Granite Works, Sembury, Mass.; Baldwin Locomotive Works, Philadelphia, Pa.; Rogers Locomotive Works, Paterson, N. J.; Louisville & Nashville Railway, New Decatur, Ala., and Lake Erie & Western Railway, Lima, Ohio.

The Utah Sugar Company, Lehi, Utah, are erecting a power plant on the Bear River, which when completed will cost \$150,000. The machinery will be installed in two units of 2000 horse-power each. The first 2000 horse-power has been contracted for to the Utah Light & Power Company, who will build their own line to the power plant and connect with their line at Ogden. Thomas R. Cutler is general manager.

At the annual meeting of the stockholders of the Locke Steel Belt Company, Bridgeport, Conn., held December 2, the following directors were elected: Fred. R. White and T. B. Little, Cleveland, Ohio; Jasper R. Rand, New York, president Rand Drill Company; J. A. Beeber, Williamsport, Pa.; Allen R. Bole, Brooklyn, N. Y.; C. C. Woolworth, Albany, N. Y.; M. McVoy, Jr., New York, president Locke Steel Belt Company; S. D. Locke, Bridgeport, Conn., secretary and treasurer Locke Steel Belt Company, and L. B. Ball, Bridgeport, Conn., general manager Locke Steel Belt Company.

According to plans filed in the Bureau of Building, Buffalo, N. Y., last week, the new shop at the Snow works of the International Steam Pump Company will be 110 x 534 foot.

The Hodgson Mfg. Company, Ottumwa, Iowa, have filed articles of incorporation, the incorporators being Alvin Hodgson, C. W. Thornton and M. B. Hutchinson. The company will manufacture derrick machinery. The capital stock will be \$10,000, divided in shares of \$100 each. Geo. H. Smith has been elected president, C. W. Thornton vice-president and M. B. Hutchinson secretary and treasurer.

The Q & C Company shipped last week from their factory at Chicago Heights one of their largest special metal sawing machines to the United States Government, to be used at the Cavite navy yard at Manila.

The William Kavanaugh Company, Zellenople, Pa., inform us that they have not yet purchased the equipment for the new machine shops they are to erect at Macksburg, Ohio, and have not decided whether steam or gas will be used for power. The firm of William Kavanaugh & Co. operate shops at Zellenople and Petrolia, Pa., and Woodsfield, Ohio. On August 1 they were incorporated with a capital stock of \$75,000, and on December 1 increased the capital to \$150,000, and at the same time purchased the machine shops of Davis & Stanton, at Bruin, Pa. The company manufacture oil well drilling and fishing tools and gas engines. J. M. Bashline is secretary.

The addition to the plant of the Bullard Machine Tool Company, Bridgeport, Conn., now in course of construction, will be 40 x 112 feet, and is to be a crane section solely. All equipment has been purchased.

J. M. Gagan & Co., Chicago, have incorporated with a capital stock of \$5000. The incorporators are J. M. Gagan, B. Y. Craig and F. W. Ganse. The company will conduct a manufacturing business and deal in machinery. The selling line will be largely confined to the manufactured product of the Chicago Hardware Foundry Company of North Chicago.

The Coshocton Machine & Mfg. Company, capitalized at \$20,000 by George A. Seegrist, P. J. Harchet, Andrew Welner, J. C. F. Hutton and R. A. Pomerene, have succeeded the firm known as the Coshocton Machine Works, Coshocton, Ohio. They will erect a new factory for the manufacture of die presses.

The Washington Railway & Electric Company, Washington, D. C., advise us that they have not yet decided upon the machinery required for the large power plant to be erected on the Potomac River by the Great Falls Power Company, control of whose stock the Washington Company recently purchased.

#### Boilers, Engines, &c.

Donley C. Hawley, Mayor, Burlington, Vt., writes us that the State Legislature has passed an act authorizing the city to issue \$50,000 of bonds for the installation of an electric plant.

It is stated that the Oswego Boiler Works, Walter M. Jermyn, proprietor, Oswego, N. Y., have been closed down and are now on the market for sale.

The Standard Pole & Tie Company, 44 Broad street, New York, have received a franchise for an electric light plant at Brooksville, Fla. The company are not yet ready to receive bids for equipment. The material for the telephone plant they are building at the same place has all been purchased.

The Ward-Corby Company, an offshoot of the Ward-Mackey Company, who operate large bakeries in Pittsburgh, have under way new bread and cracker bakeries in Chicago and Providence, which plants are being supplied each with 150 horse-power boilers furnished by the Pittsburgh Gage & Supply Company of Pittsburgh. They are also supplying the Pittsburgh Tool & Drop Forge Company, Cheswick, Pa., with one 150 horse-power water tube boiler, as well as the Windsor Hotel, Wheeling, W. Va., with a 65 horse-power water tube boiler.

At a meeting of the directors of the Westinghouse Machine Company, held in Pittsburgh last week, it was decided to increase their annual dividend rate from 6 to 10 per cent. Since their incorporation, in 1881, the capital has been increased from \$200,000 to \$3,000,000, while the investment in plants and equipment is placed at \$8,000,000. In addition to steam engines, ranging from 5 to 10,000 horse-power, the company manufacture steam turbine engines and mechanical stoking plants. They are making also an improved gas engine. In addition to the plans already in operation the company have now under erection at Trafford City a complete foundry of the most modern design, which will be ready for operation early in 1903. Since their inception the company have turned out over 10,000 engines of various sizes and types, and their product has, within the past few years, begun to enjoy extensive sale and use abroad.

The Bluegrass Traction Company, Maysville, Ky., advise us that they will probably erect their power house at either Lexington or Paris. The company are preparing to construct an electric line of about 23 miles in length, to run from Maysville to several of the surrounding towns. John Duley, president of the Board of Trade, is interested.

#### Foundries.

The Plainfield Foundry Company, recently incorporated, operate a foundry at Plainfield, N. J., making gray iron, bronze, brass and aluminum castings. The company are also going into the manufacture of hot water and steam furnaces.

The Buffalo Foundry Company, Buffalo, N. Y., have increased



their capital stock to take care of the large new foundry they are erecting and which is about ready for operation.

C. N. Welch, proprietor of the Milford Iron Foundry, Milford, Mass., his son, and Edward Bailey, formerly of Easton, Pa., have formed a stock company with a capital of \$30,000, and after January 1 the foundry will be operated by the corporation. The business is to be extended and the plant enlarged by an addition, 50 x 120 feet. A new core oven will also be built.

The Peru Steel Castings Company, Peru, Ind., are increasing the capacity of their plant by the installation of new machine tools.

The Bay City Iron Works is the name adopted by the purchasers of the Fairhaven Foundry & Machine Company's plant, at Fairhaven, Wash. The new works are being located at the foot of McKenzie street. John T. Graham is manager.

The Colorado Foundry Company, Pueblo, Col., recently incorporated with a capital stock of \$25,000 for the manufacture of gray and malleable iron castings, will have their foundry in operation by January. The plant will be equipped with reverberatory furnaces and will be operated by independent motors, which have not yet been purchased. The rest of the machinery has been secured. O. P. Sells, mechanical and electrical engineer, is interested.

The Helmick Foundry & Machine Company, Fairmont, W. Va., will enlarge their plant sufficient to double the present capacity. They make mill cars, coal and coke plant equipments and castings.

Stockholders of the Wilkes Foundry Company, Toledo, Ohio, have voted favorably on the proposition to increase the capital stock from \$25,000 to \$62,500. The additional funds will go toward the erection of an addition to the present foundry, also for another large building for other work. The plant will be the largest of its kind in Toledo.

#### Bridges and Buildings.

The West Virginia Bridge & Construction Company of Wheeling, W. Va., builders of bridges and structural steel buildings, have about completed their plant and are now turning out material.

#### Fires.

The bursting of a 12-foot fly wheel, December 4, wrecked the plant of the United Power Company, East Liverpool, Ohio.

The American Sheet Steel Company's plant, at Canal Dover, Ohio, was burned December 13. The loss is over \$1,000,000. It is understood that the plant will be immediately rebuilt on a larger scale.

#### Hardware.

Peninsular Emery Wheel Company, Detroit, Mich., manufacturers of adamite, corundum and emery wheels of every description, wire webbed wheels and corundum saw gummars, since February, 1900, have doubled their capacity with new buildings and furnaces, and yet at the present time are taxed to their capacity.

Indiana Foundry Company, successors to Sutton Bros. & Bell, manufacturers of foundry hardware and mill and farm machinery, Indiana, Pa., report an increased demand for the Sutton tuyere, to meet which they are putting in numerous labor saving appliances. This demand is, of course, largely domestic in character, but an export trade gradually is being worked up.

Standard Mfg. Company, Galesburg, Mich., manufacturers of steel and wooden wind mills and towers, pumps, tanks, pipe and tubular well supplies, are enlarging their works and putting in a galvanizing plant, as their wind mill trade is constantly increasing. They also do general jobbing in foundry and machine work.

F. E. Myers & Bro., Ashland, Ohio, have just closed a contract for an addition to their storage and shipping warehouse of over 100 feet in length, four stories high. It will be opened up in connection with their present brick warehouse, making the entire structure when completed 350 feet long by 50 feet wide, four stories in height, which they consider will be one of the most extensive and best built warehouses in the state for the storing and shipping of goods. The contract covers immediate construction, made necessary by largely increased general requirements.

E. C. Atkins & Co., the saw manufacturers, Indianapolis, Ind., report a very satisfactory condition of trade and increase in its volume over that of last year. The growing scarcity of lumber has increased the demand for band saws in the large mills. The hand saw department has made a gratifying response to the efforts of the company to increase the yearly sales, the total this year being unapproached in the company's history. Foreign trade this year was larger than ever before. The year will be marked by the company's abandonment of natural gas as fuel for forge and furnace and tempering ovens and the building of an independent gas plant, the first of its kind in Indianapolis. It was completed November 1 at a cost of \$50,000. It has been found to do what was wanted. The company have let the contract for an extension to the two-story brick building and have ordered two additional generators, another boiler and another scrubber. A handsome new four-story, modern office building costing \$10,000 is near enough to completion to justify the company in preparing to occupy it on New Year's Day.

The extensive factory of the Federal Mfg. Company, at Indianapolis, Ind., has now run steadily for seven years without missing a day except holidays. The year's business has been good and slightly better than in 1901. The greater part of the factory's product is still bicycle chains, of which it can make over 15,000 feet a day. Other chains, for power transmission, are also produced and are now a close second in output. The greatest growth of 1902 has been in the automobile chain department. The outlook for next year is promising. The Diamond factory, as the Indianapolis branch of the Federal Mfg. Company is known, is said to make two-thirds of the bicycle chains used in this country, and one-fourth of the world's product. The Federal Company have increased their capital stock from \$1,800,000 to \$5,000,000. They are one of the constituent companies of the American Bicycle Company and have headquarters at Cleveland, Ohio.

The J. Creque Company, Limited, have filed articles of association at Jackson, Mich. The company are capitalized at \$10,000, divided in shares of \$100 each. The officers of the company are: Durfey D. Beals, chairman; Loraine Thurston, treasurer, and Josiah Creque, secretary and manager. They will manufacture galvanized iron and other sheet metal goods, as cream separators, feed cookers, tank heaters, wind mill tanks, aerators, washing machines, &c.

#### Miscellaneous.

The Westinghouse Electric & Mfg. Company of Pittsburgh will open a plant near Detroit, Mich., for the purpose of preparing mica for use in making electrical machinery.

The Crest Mfg. Company, makers of the Crestmobile, Cambridge, Mass., have lately increased the size of their works considerably, and are now occupying about 30,000 square feet. They will make a specialty of low priced runabouts and automobiles adapted for light touring, following out the lines they have partially laid down.

F. F. Busch, City Clerk, Terry, Okla., writes us that the city has voted \$50,000 in bonds for water works.

The Chase Rolling Mill Company of Waterbury, Conn., are completing the construction of their finely equipped brass mill, putting in new boiler plant, &c.

The Salem Iron Company, Leetonia, Ohio, have contracted with Wm. B. Scaife & Sons Company, Pittsburgh, Pa., for a 2500 horse-power We-Fu-Go water softening and purifying system. The Salem Iron Company, after going into the matter very carefully, have decided that the We-Fu-Go system will meet their requirements. Among some of the other recent contracts which the Wm. B. Scaife & Sons Company have closed for both the Scaife and We-Fu-Go systems are the following: Pittsburgh Plate Glass Company, Elwood, Ind., 2500 horse-power; Rochester & Pittsburgh Coal & Iron Company, Dubois, Pa., 2500 horse-power; Toledo Furnace Company, Toledo, Ohio, 4000 horse-power; Buffalo & Susquehanna Iron Company, Buffalo, N. Y., 6000 horse-power, and Pennsylvania Salt Mfg. Company, Wyandotte, Mich., 1750 horse-power.

Press reports state that a company are being organized by prominent capitalists of Mexico City, Mexico, for the establishment in that city of a large plant for the building of cars and railway equipment.

James Barclay, Moline, Ill., who has been treasurer and superintendent of the Deere & Mansur Company for several years, is to be general manager and a member of the new firm of Foster & Barclay Company, soon to be incorporated at Bettendorf, Iowa, with a capital stock of \$350,000. The new company will manufacture a full line of farm implements. Property has been purchased at Bettendorf for the company's plant, and the work of construction of buildings will be begun as soon as weather conditions permit.

The Orient Coal & Coke Company, recently organized at Pittsburgh, at the head of which is Julian Kennedy, the well-known engineer, have received their charter, the capital stock being \$2,000,000. It is understood this new company will build 500 coke ovens at once, the output going to blast furnaces in the Mahoning and Shenango Valleys.

The Winton Motor Carriage Company, Cleveland, are building an addition to their new plant which will be used as an experimental shop. It will be separated from the main shop and will be 150 x 200 feet. It will be used exclusively for experimental work and for the manufacture of high speed racing machines.

The Neer Mfg. Company of St. Paris, Ohio, are planning to remove their plant to Urbana, Ohio. They manufacture agricultural machinery.

The Faultless Rubber Company of Akron, Ohio, have completed plans for a large addition and will install power equipment.

The Ziegler Filter & Pottery Company of Toledo, who were recently incorporated by G. C. Ziegler, E. D. Scraftord and others, will erect a plant near Toledo for the manufacture of filters and general earthenware.

The United States Gypsum Company will erect a plant in Cleveland on the Cuyahoga River. The mill building will be 60 x 108 feet and three stories high. The machinery will include a 200 horse-power compound condensing engine and a 250 horse-power boiler. Plans have been prepared by H. Hansen of Chicago, and some of the contracts have been placed.



## The Iron and Metal Trades.

The acquisition of the Sharon and Donora plants by the United States Steel Corporation is of special interest to the Wire trade, since the total product of the latter and a large share of that of the former went into Wire. The Sharon Company also make Tin Plate, the product having been sold for five years to the American Tin Plate Company, and are just completing a Sheet mill and a Tube mill. It seems probable that the contemplated building of a Rail mill at the Donora Works will not now be carried out.

From a trade point of view, the corporation have strengthened their position, since both of the enterprises are largely self-contained, from the raw material in the ground to the finished product, and since both of the plants are extremely well planned and built. The fact, however, that the corporation have resumed the purchase of outside works, and that by the guarantee of an issue of bonus, comes as a surprise to the trade, which had learned to look for development of existing plant as the line along which additional capital would be placed. It is possible that the purchase may take the place of some of the new plants contemplated.

Conditions, so far as the current production of crude and finished materials is concerned, have not changed for the better recently, the movement being still hampered by the causes frequently alluded to.

Practically all of the leading Pig Iron distributing markets note dullness and apathy, which is natural at this time. Still it must be noted that there are signs that Southern Pig Iron makers have abandoned their extreme views and are making more attractive prices, notably on Forge Irons.

Negotiations which were pending between the United States Steel Corporation and the Bessemer Association for a large block of Pig Iron for next year have been broken off for the present.

In the Steel trade business is very much restricted in domestic material. Further sales have taken place of foreign Billets, both for the Chicago district and for the Atlantic Coast markets.

St. Louis enterprises have this week called for upward of 10,000 tons of Structural work, which goes to the leading interest.

In some markets the Bar trade shows some indications that prices are not very firm. Sheets, on the contrary, so long sharply contested over by the outsiders, are getting into a firmer position.

Philadelphia notes considerable purchases of Scrap, among them one lot of 4000 tons of foreign Crop Ends.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

Dec. 17, 1902, Dec. 10, 1902, Nov. 19, 1902, Dec. 18, 1901.

### PIG IRON:

Foundry Pig No. 2, Standard, Philadelphia .....	\$23.00	\$23.00	\$23.50	\$15.75
Foundry Pig No. 2, Southern, Cincinnati .....	22.00	22.25	22.25	14.25
Foundry Pig No. 2, Local, Chicago .....	23.00	23.00	23.00	15.50
Bessemer Pig, Pittsburgh .....	22.00	22.00	22.00	16.50
Gray Forge, Pittsburgh .....	20.50	20.75	21.00	15.00
Lake Superior Charcoal, Chicago .....	25.00	25.00	26.00	18.50

### BILLETS, RAILS, ETC.:

Steel Billets, Pittsburgh .....	29.00	29.50	28.00	27.00
Steel Billets, Philadelphia .....	*27.00	*27.50	*26.50	29.00
Steel Billets, Chicago .....	*29.50	*29.50	*29.00	....
Wire Rods, Pittsburgh .....	34.50	34.50	35.50	34.25
Steel Rails, Heavy, Eastern Mill .....	28.00	28.00	28.00	28.00

### OLD MATERIAL:

O. Steel Rails, Chicago .....	18.75	18.75	18.75	14.00
O. Steel Rails, Philadelphia .....	21.00	21.00	21.00	18.00
O. Iron Rails, Chicago .....	24.00	24.00	24.50	21.50
O. Iron Rails, Philadelphia .....	23.50	23.50	24.00	21.50
O. Car Wheels, Chicago .....	24.00	24.00	24.00	15.50
O. Car Wheels, Philadelphia .....	20.00	20.00	20.00	16.75
Heavy Steel Scrap, Pittsburgh .....	21.00	21.00	21.00	....
Heavy Steel Scrap, Chicago .....	18.25	18.25	18.50	13.50

### FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia .....	1.92	1.92½	1.85	1.65
Common Iron Bars, Chicago .....	1.75	1.75	1.75	1.65
Common Iron Bars, Pittsburgh .....	1.70	1.70	1.70	1.55
Steel Bars, Tidewater .....	1.75	1.75	1.75	1.70
Steel Bars, Pittsburgh .....	1.60	1.60	1.60	1.50
Tank Plates, Tidewater .....	2.10	2.10	2.10	1.75
Tank Plates, Pittsburgh .....	1.85	1.85	1.75	1.60
Beams, Tidewater .....	2.00	2.00	2.00	1.75
Beams, Pittsburgh .....	2.00	2.00	2.00	1.60
Angles, Tidewater .....	2.00	2.00	2.00	1.75
Angles, Pittsburgh .....	1.90	1.95	2.00	1.60
Skelp, Grooved Iron, Pittsburgh .....	1.90	1.90	1.92½	1.72½
Skelp, Sheared Iron, Pittsburgh .....	2.00	2.00	2.05	1.80
Sheets, No. 27, Pittsburgh .....	2.65	2.65	2.65	2.90
Barb Wire, f.o.b. Pittsburgh .....	2.45	2.45	2.45	2.90
Wire Nails, f.o.b. Pittsburgh .....	1.85	1.85	1.85	1.95
Cut Nails, Mill .....	2.05	2.05	2.05	2.05

### METALS:

Copper, New York .....	11.65	11.65	11.40	13.87½
Spelter, St. Louis .....	4.60	4.60	5.05	4.12½
Lead, New York .....	4.10	4.10	4.10	4.00
Lead, St. Louis .....	3.97½	3.97½	3.97½	3.95
Tin, New York .....	25.75	24.85	25.12½	24.50
Antimony, Hallett, New York .....	7.12½	7.12½	7.25	8.25
Nickel, New York .....	40.00	40.00	40.00	60.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York .....	3.79	3.79	3.79	4.19

\* Foreign.

## Chicago.

FISHER BUILDING, December 17, 1902.—(By Telegraph.)

Storms and other hindrances to traffic incidental to this season of the year have further aggravated the difficulties of furnaces, foundries and mills, and there is further evidence of traffic congestion in the West as well as in the Pittsburgh district, and at the ovens both in the South and East, affecting local business more or less. Business in domestic production of all heavy material, Iron and Steel, has been very light during the week, the only features of interest being the sale of a considerable tonnage of foreign Billets and the negotiations pending on a large tonnage of foreign Rails. The lack of cars in the South and of motive power in the North are further delaying deliveries of Pig Iron, but the market has been unusually quiet during the week. In the lighter materials business, while quiet, has been above the average for this season.

**Pig Iron.**—The market has been very quiet throughout the week, sales being confined largely to Iron to be shipped in December and January, but the offerings have not been pressing and prices have not changed essentially, but for immediate shipment about 50c. per ton over quotations has been realized. The largest individual sales have been for lots of 800 tons, and the aggregate of all kinds has been very moderate. Among the sales have been 800 tons of No. 2 Southern Foundry on the basis of \$21, and 800 tons ditto at \$20, Birmingham, but for deliveries beginning in January 500 tons have been sold on the basis of \$19, Birmingham, the contract to run throughout the first six months of the year. There have been offerings of Canadian Iron of No. 2 Foundry in several hundred ton lots for December-January delivery between \$23.50 and \$24, f.o.b. Chicago. While the

offerings of Bessemer Iron have increased but little lower prices have prevailed, 500 tons of Standard Bessemer for immediate delivery having sold at \$24, Chicago, while Malleable Bessemer has sold in 100 to 200 ton lots at \$23, for deliveries extending from April to June, 1903. High Silicon Iron is as scarce as ever and commands even higher premiums, some 8 to 10 per cent. Silicon selling during the week as high as \$33.50, Chicago, and in exceptional instances even greater premiums have been paid. As a rule buyers are holding off or buying only such Metal as is needed for immediate melting. On the other hand, the offerings of tonnage by furnaces are light for both early and late shipments. The following are the prices current for deliveries beginning in January:

Lake Superior Charcoal.....	\$25.00 to \$26.00
Local Coke Foundry, No. 1.....	23.50 to 24.00
Local Coke Foundry, No. 2.....	23.00 to 23.50
Local Coke Foundry, No. 3.....	22.50 to 23.00
Local Scotch, No. 1.....	24.00 to 24.50
Ohio Strong Softeners, No. 1.....	27.50 to 28.00
Southern Silvery, according to Silcon.....	26.15 to 29.15
Southern Coke, No. 1.....	23.65 to 24.15
Southern Coke, No. 2.....	23.15 to 23.65
Southern Coke, No. 3.....	22.65 to 23.15
Southern Coke, No. 1 Soft.....	23.65 to 24.15
Southern Coke, No. 2 Soft.....	23.15 to 23.65
Foundry Forge.....	22.15 to 22.65
Southern Gray Forge.....	19.15 to 19.65
Southern Mottled.....	19.15 to 19.65
Southern Charcoal Softeners, according to Silcon.....	27.15 to 27.65
Alabama and Georgia Car Wheel.....	29.15 to 29.65
Malleable Bessemer.....	23.50 to 24.00
Standard Bessemer.....	24.00 to 24.50
Jackson County and Kentucky Silvery, 6 to 8 per cent. Silcon.....	31.00 to 32.00

**Bars.**—Little if any improvement has been experienced in the demand for Bar Iron, and there are rumors of sales as low as 1.70c for deliveries beginning in January and extending forward several months. It is claimed that one contract for a large tonnage has been placed, but is not credited. For early shipment 1.75c. to 1.80c. is asked. There has been some little improvement in the new tonnage placed for Steel Bars, agricultural implement manufacturers placing some important contracts, but as a rule the market has remained quiet. The following are the prices current: Bar Iron, 1.70c. to 1.80c.; Soft Steel Bars, 1.75c. to 1.80c.; Hoops, 2.15c. to 2.25c.; Angles, 1.85c. to 1.90c., base, mill shipment. But few orders have been received by merchants and prices have remained nominally unchanged: Bar Iron selling at 2.15c.; Soft Steel Bars, 2c. to 2.25c.; Angles at 2.50c., and Hoops at 2.40c., base, from store.

**Structural Material.**—There has been a decided lull throughout the market for Structural Material of all kinds. On the smaller and medium sizes the mills are sold for four to six months, while on heavier Beams and Channels deliveries can be made within six to ten days. An interesting transaction is one of about 500 tons of foreign Shapes for delivery at Seattle and San Francisco, shipment to be direct from Antwerp by sail. For domestic Steel, mill shipment, prices are as follows: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 2c. to 2.25c. There has been little movement from local stocks and prices have been without further change. The following are the prices current for shipment from local yards: Beams and Channels, cut to length, 2.50c. to 3c.; Angles, 2.25c. to 2.50c.; Tees, 2.30c. to 2.55c., at local yards.

**Plates.**—The volume of business during the week has been very light, with few if any important contracts pending, but with the mills sold ahead from three to six months the outlook could scarcely be stronger. The following are the prices current: Tank Steel, ¼-inch and heavier, 1.75c. to 2.10c.; Flange, 1.85c. to 2.10c.; Marine, 1.95c. to 2.20. There has been only a moderate inquiry for small lots from local yards, but prices have remained steady as follows: Tank Steel, ¼-inch and heavier, 2.25c. to 2.50c.; Tank Steel, 3-16-inch and No. 8, 2.30c. to 2.50c.; Flange, 2.50c. to 2.65c., all f.o.b. warehouse, Chicago.

**Sheets.**—There has been a fair tonnage in Sheets, everything considered, although the competition which continues keeps business in an unsatisfactory condition. The following are the official prices for Black Sheets, mill shipment, carload lots, f.o.b. Chicago: No. 20, 2.55c. to 2.60c.; Nos. 22 and 24, 2.60c. to 2.70c.; No. 26, 2.70c. to 2.80c.; No. 27, 2.80c. to 2.90c.; No. 28, 2.90c. to 3c. Galvanized Sheets have been moderately active, but easy and somewhat irregular with a discount of 75 and 10 and even greater discounts allowed on the base price. The following are the net prices: No. 27, 3.25c. to 3.50c. for mill shipment, and small lots from store at 3.40c. to 3.65c., Chicago.

**Cast Pipe.**—Business has been confined largely to small lots of small sizes and the tendency of prices is down in sympathy with raw material, although quotations are without essential change at the present time. Manufacturers sell small lots at the following prices: 4-inch \$36.50 to \$37; 6-inch, \$35.50 to \$36; 8-inch and upward, \$34.50 to \$35; Gas Pipe, \$1 per ton higher, f.o.b. Chicago.

**Billets.**—The most important feature of the week is a sale of about 18,000 tons of foreign Billets by local interests, 10,000 tons being for delivery in the East and 8000 tons for shipment to the West. Prices for the Atlantic seaboard deliveries vary from \$27 to \$28, and for Chicago and Western points from \$29.50 to \$30, delivered, duty paid. In domestic Billets business has been light and prices are little better than nominal. Single car lots of Open Hearth Billets have been sold at prices ranging from \$36 to \$40, according to analysis, buyer and time of delivery. Rerolling Billets are quoted at \$31 to \$32, mill shipment, Chicago. Wire Rods are quotable at \$34 to \$34.50, Chicago.

**Merchant Pipe.**—As far as the volume of business is concerned the outlook is improved, the tonnage prices during the week being larger than for any one week since the middle of November. As a rule the individual sales are small. There are several important contracts covering deliveries from January to April pending. The jobbing trade has been moderate. There are still some echoes of price cutting, but the local market is unusually free from such at the present time. The following are the official consumers' prices current, base, net, random lengths, for mill shipment for Chicago, carloads only:

	Steel Pipe.		Guaranteed Wrought Iron.	
	Black.	Galvd.	Black.	Galvd.
	Per cent.	Per cent.	Per cent.	Per cent.
1/8 to 3/8 inch.....	66 1/2	56 1/2	63 1/2	53 1/2
1/2 inch.....	68 1/2	58 1/2	65 1/2	55 1/2
3/4 to 6 inches.....	73 1/2	63 1/2	70 1/2	60 1/2
7 to 12 inches.....	71 1/2	61 1/2	68 1/2	58 1/2

**Boiler Tubes.**—There has been a moderate degree of activity and apparently steady market, but prices have been without essential change. The following table of discounts is subject to an additional discount of 5 per cent. in special instances for mill shipment:

	Steel.	Iron.
1 to 1 1/2 inches.....	43 1/2	38
1 1/2 to 2 1/2 inches.....	50	36
2 1/2 to 5 inches.....	61	46
6 inches and larger.....	56	36

There is more competition for the local business offering for shipment from local stock, with an additional discount of 5 per cent. granted in some instances in addition to the following schedule:

1 to 1 1/2 inches.....	35	35
1 1/2 to 2 1/2 inches.....	47 1/2	32 1/2
2 1/2 to 5 inches.....	55	42 1/2
6 inches and larger.....	47 1/2	..

**Merchant Steel.**—The market has lacked animation, but with the mills largely sold ahead on most kinds a firmer tone has continued to prevail. For mill shipment prices are as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.95c. to 2.10c.; Open Hearth Spring Steel, 2.65c. to 2.75c.; Toe Calk, 2.25c. to 2.40c.; Sleigh Shoe, 1.85c. to 1.95c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 47 off in carload lots and 42 off in less than car lots. Ordinary grades of Crucible Tool Steel are quoted at 6c. to 7c. for mill shipment; specials, 12c. upward.

**Rails and Track Supplies.**—The most interesting feature of the market has been the inquiry for two lots of foreign Rails, one of 75,000 and one of 25,000 tons, for shipment to the Pacific Coast. Negotiations are now pending. The market for domestic Rails has been quiet, with inappreciable sales of Standard Sections, but there have been further liberal sales of Light Rails on the basis of quotations. The demand continues mainly from electric roads. There has been less demand for Relaying Rails, which are now offered at a little lower figures. Official prices for domestic Rails continue firm at \$28 for standard and \$27 for second quality, mill shipment. Light Rails continue to range from \$35 to \$45, according to weight. There has been an increased demand for Bolts and Spikes, with full prices readily realized, which are as follows: Splice Bars or Angle Bars, 2c.; Spikes, 2.50c.; Track Bolts, with Hexagon Nuts, 3.10c. to 3.45c.; Square Nuts, 2.95c. to 3.10c.

**Old Material.**—There has been some little improvement in the demand, with the market a little firmer in tone, especially for heavy stock. The offerings have not increased materially, even of such grades as are taken more largely by rolling mills. Old Car Wheels are still very scarce and wanted. Among the sales of the week have been 300 to 400 tons of Steel Rails, long lengths, at \$24. Relaying Rails have been quiet and prices are without essential change. The following are the prices per gross ton, Chicago:

Old Iron Rails.....	to \$24.00
Old Steel Rails, mixed lengths.....	\$18.75 to 19.00
Old Steel Rails, long lengths.....	23.50 to 24.50
Heavy Relaying Rails.....	32.00 to 32.50
Old Car Wheels.....	24.00 to 25.00
Heavy Melting Steel Scrap.....	18.25 to 18.50
Mixed Steel.....	15.50 to 16.00

The following quotations are per net ton:

Iron Fish Plates.....	to \$22.00
Iron Car Axles.....	\$24.50 to 25.00
Steel Car Axles.....	23.50 to 24.00
No. 1 Railroad Wrought.....	19.50 to 20.00
No. 2 Railroad Wrought.....	17.50 to 18.00



Shafting .....	20.00 to	21.00
No. 1 Dealers' Forge .....	16.00 to	16.50
No. 1 Bushing and Wrought Pipe .....	14.00 to	14.50
Iron Axle Turnings .....	..... to	15.00
Soft Steel Axle Turnings .....	14.50 to	14.75
Machine Shop Turnings .....	13.50 to	14.00
Cast Borings .....	10.00 to	10.25
Mixed Borings, &c. ....	10.50 to	11.50
No. 1 Bolders, cut. ....	14.50 to	15.00
Heavy Cast Scrap .....	17.50 to	18.00
Stove Plate and Light Cast Scrap .....	14.00 to	14.50
Railroad Malleable .....	16.25 to	16.50
Agricultural Malleable .....	15.75 to	16.00

**Metals.**—A dull and weak market has been experienced for Copper during the week, but prices have not changed essentially. Lake is offered at 11½c. in carload lots and 11¼c. to 12c. in less than carload lots. Pig Lead has continued firm but quiet at 4.05c. in 50-ton lots, 4.07½c. in carload lots and 4.10c. in a jobbing way. Sheet Zinc has been steady but with only a moderate movement at 6¼c. in lots of 600 tons and over. Old Metals have been very quiet, but prices have been sustained, as follows: Heavy Cut Copper, 10¼c.; Red Brass, 10¼c.; Copper Bottoms, 9¼c.; Lead Pipe, 3.90c.; Zinc, 3.80c.

**Coke.**—A little stronger tone has been developed during the week, receipts of Coke being lighter than for some time past, and sales of Foundry Coke have been made at \$10 to \$10.50 per ton on track. There is some inquiry for Coke for delivery during the first half of next year, but buyers are not disposed to pay the prices asked. Contracts for Foundry Coke have been placed for the entire year at \$4.50 to \$5 per ton, but such deals are exceptional. For Furnace Coke \$4 and upward is asked, but contracts on this basis are few.

## Philadelphia.

FORREST BUILDING, December 16, 1902.

The peculiar conditions which have been met with in the Iron trade during the past year are still in force in all departments, without being the least abated. Theories may be presented with considerable force to suit either bulls or bears, but neither side is prepared to take a firm position for keeps. This is very surprising when such an array of facts can be gathered to support either theory, but this perhaps is in itself the cause of all the hesitancy, the natural outcome being a determination to drift with the tide until new bearings can be taken. To go into detail is like threshing old straw, yet it is necessary to do this if new soundings are taken. As a rule the tendency of prices is a fairly safe guide, and is usually the most prominent feature for consideration. Even this, however, is not strongly defined at the present time, so that the market needs to be carefully scrutinized before a distinct diagnosis can be made. Perhaps it would be correct to say that the feeling is easier, in some cases prices are a trifle lower, but not in all cases. A first-class buyer for deliveries extending until toward the last quarter of 1903 could do possibly \$1 a ton better on Pig Iron than could have been done a month or two ago. Spot lots are still scarce, but \$23 to \$23.50 would bring almost any brand of No. 2 X for immediate shipment, and \$22.50 to \$22.75 would secure a six months' delivery. These reduced figures are not due to any accumulation of stocks, but if the metal can be spared at all it is considered better to accept the bid than to run the risk of being crowded out at a later date by foreign Iron. The last mentioned is really a controlling factor, as arrivals at both Philadelphia and Baltimore, and possibly New York and Boston, are so regular that it requires good management to arrange so that entire cargoes are sold to arrive, as in many cases the distribution is in lots of 50 to 500 tons each. The magnitude of this business is shown by the shipments from three British ports to the United States during the last week in November, which was close to 40,000 tons, without taking into account the exports from Germany. The easier condition of our market is therefore chiefly due to imported material, and not to any change in the producing interests in this country. The condition of furnaces on the first of the month and the stocks on hand shows that consumption of American Iron is almost stationary. Production during November increased about 25,000 tons and stocks increased 23,000 tons. It is safe to assume that from 60,000 to 80,000 tons of foreign Iron were also consumed during that month, in which case the total would be at the approximate rate of 18,000,000 tons per annum. This is fairly good evidence that consumption is not decreasing yet, but there is little doubt that the close of the year will develop problems of serious import. Can consumption be maintained during 1903 on the same scale as during 1902? If so, how much foreign Iron can we take without interfering with our own productive capacity? and what prices will be required to cut down importations? These are problems which must be solved. Then comes the question what reduction must be made in the cost of producing Iron so as to permit a decline sufficient to keep out foreign material? The last mentioned proposition is probably more important than is generally supposed. Consumers must either have lower prices for American Iron or they will increase their purchases of foreign material. It is all very well to say that the cost of

fuel, of labor, of freights and other items makes it impossible to reduce prices of Pig Iron, but then comes the alternative of doing that or being crowded out; which is it to be? So far no reference has been made to the possibility of a falling off in consumption or of an increase in production, yet both of these are within the range of probabilities. Either one would affect the market unfavorably, while if they occurred simultaneously serious results would be likely to follow. Possibly these suggestions may be regarded as speculative, but they are speculations which are unavoidable at the present time and under present conditions. Some consideration is also due to the decline in railway and industrial securities. It is hardly to be expected that the Iron and Steel trades can recover their buoyancy, when for nearly three months there has been a decline in stocks amounting to hundreds of millions of dollars, and as yet without any well defined indications of recovery. The Iron market, however, cannot be in any immediate danger when there are no accumulations of stocks to be thrown on the market, but the point for consideration is in regard to forward contracts. For the present it is believed that transactions of this character are not being entered into very freely, although a vast amount of business was entered during the summer months, in regard to which there is more or less anxiety. But the entire situation is being carefully considered, and while there is pretty good evidence that the outlook is not entirely satisfactory, there is also a fairly well grounded expectation of at least six months more of good business, and possibly a good deal more than that; but which ever, or whatever it is to be, will probably be fairly well indicated during the next four or five weeks. It is therefore only natural that in view of the magnitude of the interests involved much anxiety should be felt in regard to events during the period mentioned. The car shortage and the fuel shortage are almost as great as a month ago, and for that reason, without mentioning others, business in all lines is greatly handicapped, and from present appearances is likely to continue so for an indefinite period. Under these conditions it is almost impossible to size up the situation satisfactorily unless prices are taken as a guide, in which case, as already shown, the tendency is towards increased easiness, although the real test will not come until after the turn of the year.

**Pig Iron.**—The market may be defined as featureless. There is no pressure to buy, no pressure to sell, so that current transactions have no special significance. The shortage of fuel and of rolling stock retards both production and consumption, so that it is purely a matter of opinion what the situation would be if no such obstacles existed. Pig Iron is certainly not plentiful, as buyers have in most cases to do a good deal of shopping before they can get what they want. The fact of foreign material being so easily available is a kind of insurance against anything like famine conditions, so that if quotations on American are out of proportion other Irons are substituted. This will probably continue until the outlook becomes more settled, so that in the meantime the market is likely to be fairly steady at about last week's prices. It may be said, however, that the waiting mood is on the chance of lower prices, as fears of higher prices are pretty well dissipated for the present. Cargo lots can be done at about \$18 for Middlesbrough, \$19.75 to \$20.25 for Westphalian, \$20.25 for Bessemer and \$21 to \$22 for Low Phosphorus. Ordinary lots ranging from a few carloads to 1000-ton lots command about the following prices for deliveries in buyers' yards, city or at nearby points:

No. 1 X Foundry .....	\$24.00 to \$25.00
No. 2 X Foundry .....	23.00 to 23.50
No. 2 Plain .....	22.00 to 22.50
Gray Forge .....	21.00 to 21.50
Middlesbrough .....	21.00 to 22.00
Scotch .....	23.00 to 24.00

**Billets.**—Steel is very dull, and bids for good sized lots hard to secure. Nominally prices are about \$27 to \$27.50 for foreign and \$31 to \$32 for American.

**Plates.**—The demand for Plates is very satisfactory, the only trouble is in not getting work out fast enough. Consumption keeps up remarkably, but as the mills have been unable to make more than a two-thirds output, orders are a long way behind, and with continued scarcity of Coal prospects are not favorable for improvement in deliveries in the immediate future. Prices are firm and unchanged as last quoted—viz.: Small lots, 2.10c. to 2.15c.; carload lots, ¼-inch and thicker, 2c. to 2.05c.; Universals, 2c. to 2.05c.; Flange, 2.10c. to 2.20c.; Fire Box, 2.25c. to 2.30c.; Marine, 2.30c. to 2.35c.

**Structural Material.**—Business is probably as good as ought to be expected under the circumstances, but it is certainly not overly active. Orders can be placed at combination rates for any delivery after this month, although a few special sizes command a trifle more money. Prospects are fair, but a good deal depends on the weather, so that this department of the Steel trade may be described as in moderately good shape for the present but a little uncertain as to the future. Carload lots as minimum quantity as follows: Angles, 1.72c. to 1.75c.; Beams and Channels, 1.72c. to 1.90c., according to specification.



**Bars.**—So many mills are shut down for want of Coal that Bars are getting a little scarce, so that there is no difficulty in getting full quoted rates. The holiday season is at hand, however, and prospects are for firm quotations until the mills are ready to start up again. The demand seems to indicate a slight falling off in consumption, so that there is little uncertainty in regard to what the situation may be after the holidays. Prices for Refined Bars, carload lots, minimum quantities, 1.92c. to 1.95c.; Steel Bars, 1.75c. to 1.85c.

**Sheets.**—There is a good demand for Sheets, and prices are fairly steady. Mills are making full time, but may extend the holidays a little more than usual so as to accumulate good supplies of material.

**Old Material.**—There have been some rather large transactions in Steel Scrap, lots of 500 to 2000 tons having been placed, and in one case 4000 tons foreign Crop Ends was taken; also large lots Low Phosphorus Scrap at prices within the limits quoted herewith. Other Scrap is dull, as the mills want no deliveries until after the holidays. Sales mostly at medium figures between bids and offers, which are as follows, delivered in buyers' yards:

Old Steel Rails.....	\$21.00 to \$21.50
Heavy Steel Scrap.....	20.00 to 21.00
Low Phosphorus Scrap.....	26.50 to 27.50
Old Steel Axles.....	25.00 to 26.00
Old Iron Rails.....	23.50 to 24.50
Old Iron Axles.....	29.00 to 30.00
Old Car Wheels.....	20.00 to 21.00
Choice Scrap, R. R. No. 1 Wrought.....	22.00 to 23.00
Country Scrap.....	20.00 to 21.00
Machinery Cast.....	19.50 to 20.00
No. 2 Light Scrap.....	18.00 to 19.00
No. 2 Light (Ordinary).....	14.50 to 15.00
Wrought Turnings.....	16.00 to 16.50
Wrought Turnings, Choice Heavy.....	17.00 to 17.50
Cast Borings.....	10.00 to 10.50
Stove Plate.....	14.00 to 15.00

## Cincinnati.

FIFTH AND MAIN STS., December 17, 1902.—(By Telegraph.)

While the statistics call for a good degree of firmness in the Pig Iron market yet the fact that a few furnace interests are accumulating small stocks of some grades tends to make the situation a little weak. Buyers as a class are taking the ground that Iron will be considerably lower 60 days from now than it is at present. The various factors which contribute to weaken the situation are in themselves insufficient to cause anything like a slump, providing that consumption keeps up. The major portion of selling interests scout the idea of a very much lower basis than the present one, and the claim is made that the first moderate buying movement will clear the market of all stock offered below the generally accepted basis. Foundry Irons have not altered as to quotable values very much during the past week, but Mill Irons are reported weaker and selling on a lower basis. Two sales of Gray Forge are quoted which show the weakness in lower grades. Five thousand tons of Gray Forge are reported sold on the basis of \$14, Birmingham, and 500 tons same on the basis of \$13.35. The larger sale was for December and January delivery and the smaller up to March 1. Other sales in smaller lots of the same grade are quoted at \$15. Northern Irons are relatively closer sold up and stronger than the Southern product. Malleable and Bessemer are regarded as showing strength. Sales of Malleable are reported at \$23.50, Valley furnaces. For delivery after July 1 there is nothing doing, and the only basis for offerings appears to be \$18, Birmingham, for No. 2 Foundry. At present the market is seasonably dull and the amount of Iron selling is small. Freight rate from the Hanging Rock district \$1.10, and from Birmingham to Ohio River points \$3.25. We quote, f.o.b. Cincinnati, for delivery to July 1, 1903, freight rates only guaranteed to March 1, as follows:

Southern Coke, No. 1.....	\$23.00 to \$24.50
Southern Coke, No. 2.....	22.00 to 23.75
Southern Coke, No. 3.....	20.00 to 21.00
Southern Coke, No. 4.....	18.25 to 19.00
Southern Coke, No. 1 Soft.....	23.00 to 24.50
Southern Coke, No. 2 Soft.....	22.00 to 23.75
Southern Coke, Gray Forge.....	16.75 to 18.25
Southern Coke, Mottled.....	16.75 to 18.25
Ohio Silvery, No. 1.....	30.60 to 32.10
Lake Superior Coke, No. 1.....	25.60 to 26.10
Lake Superior Coke, No. 2.....	24.60 to 25.10
Lake Superior Coke, No. 3.....	23.60 to 24.10

### Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$27.75 to \$28.75
Lake Superior Car Wheel and Malleable.....	27.50 to 28.50

**Plates and Bars.**—The market is nominally on the same basis as it was a week ago, and is at present rather dull. We quote as follows: Iron Bars in carload lots, 1.92c., with half extras; same, small lots, 2.20c., full extras; Steel Bars, carload lots, 1.72c., with half extras; same, small lots, 2.20c., full extras. Plates are quoted nominally, ¼-inch, in carloads, 1.70c.; same, 3-16, 1.80c. As a matter of fact, however, mills having Plates to ship are getting 2.15c. without trouble. I-Beams and Channels, 1.70c., base. All prices f.o.b. Cincinnati.

## Birmingham.

BIRMINGHAM, ALA., December 15, 1902.

The market continues to pursue the same zigzag course that has characterized it in the immediate past, and so far as transactions are concerned there is no material change in prices. Those who are in the market for spot or nearby delivery report a trade very fair for the season; while those who are not in it report a very quiet condition of affairs. There seems to be a better disposition as to feeding the demand for spot Iron. Bearing in mind the fact that No. 2 Foundry is quoted at \$20 for the first half of 1903, on whose threshold we are standing, we can read the reason for this action. Some No. 2 Foundry for prompt shipment was sold at \$23 and some at \$23.50. But in no instance was there any significance in the quantity ordered. The aggregate even was of no moment. They were simply emergency orders. While this grade sold at prices stated, No. 1 Foundry was offered by parties at \$22 for nearby shipment, and received a bid of only \$20; and this bid was declined. This confirms and emphasizes the statement that at prevailing prices only emergency orders are on the market. No. 3 Foundry is quoted at \$22.50 by some interests, while others quote it at \$20. This difference illustrates the difference between having it and not having it. Gray Forge is quoted all the way from \$17 up to \$19, with not a single sale acknowledged at any price. Quotations on this grade have been so contradictory that your correspondent has been at particular pains to get at some actual transactions on which to base quotations. Not a single interest quotes a sale, and all repudiate the minimum quotations originating at other markets.

For the first half of 1903 the market is on the basis of \$20 for No. 2 Foundry and \$21 for No. 1 Foundry. Sales to a moderate extent were made of both grades at these prices, and the inquiry and sales were reported as better than the previous week. For the last half of 1903 there were sales on the basis of \$18 and up to \$18.75; the sales at outside figures being the smallest. One interest report very fair sales. Others report business nominal.

The car famine is reported as showing no improvement. All shippers are still full of complaints of inability to move Iron that is overdue, and which they are anxious to ship. Iron is still piling up in furnace yards, and this is a good test as to the situation in this respect, in spite of the railroad assertions that it has improved and is constantly getting better. Material relief is not yet in sight.

Several important companies filed articles of incorporation the past week. Among them was a cotton mill at Siluria on the line of the Louisville & Nashville Railroad, about 25 miles out. The company control and own 950 acres of land. Work on the erection preliminaries will commence in January. The mill will make fine prints a specialty. T. C. Thompson, a large local contractor, is the moving spirit of the enterprise.

The Bessemer Coal, Coke & Railroad Company were incorporated with a capitalization of \$500,000, the parties most largely interested being local people. The charter says they are to mine Coal and Ore, manufacture Coal Tar, Coke, &c. The Mississippi River & Cannel Coal Company were incorporated with a capital of \$150,000, with Geo. Clifton as president, W. J. Francis as secretary-treasurer and John M. Kirkwood as manager of mines. Their mines are at Oakman in Walker County, and the company will pay special attention to the Mississippi River trade.

An important item is the consolidation of the American Bolt Company of Lowell, Mass., with the Southern Nut & Bolt Works of this city. The entire equipment of the Lowell plant will be transferred to this point and the two firms will amalgamate, with W. H. Merritt of the local company as general manager. The other important officials will come from the Lowell plant. The capitalization will be \$150,000, and the capacity of the combination will be materially increased, as well as the variety of work done. Contracts have been let for the new buildings on a site at East Birmingham. The forging room is to be 50 x 160 feet, while the threading, machinery and packing room is to be 75 x 160 feet. The Merritt plant here will continue in operation until the buildings are ready to house the new family.

All the details connected with the financing of our third sky scraper have been completed and the contract let for its erection. It involves an expenditure of \$700,000, represented by \$300,000 in bonds, \$200,000 in preferred stock and \$200,000 in common stock. Outside and local capital are equally interested. The building is to be completed by next October.

Gadsden will be indebted to Captain Elliott of the Southern Car & Foundry Company for a large addition to its furnace capacity, as he has purchased a furnace equipment at St. Louis which he will dismantle and re-erect at Gadsden. When ready for business it will have all the needed material at hand to feed it.

The Alabama Tube Works report a full order book and an increased and continuously increasing business. They impart the cheering news that they anticipate a large volume of new business after the holidays are over.

The Rail mill is still grinding out Rails and it can be said of the result, "It is good." It has successfully made, so far, Rails from 60 to 80 pounds, but has not yet entered the general market. The demand for Steel continues good, and for Billets at the mill prices range from \$30 to \$32.50.

The quarterly report of the Sloss Company shows the profits that accrue in Iron making when good management is at the helm. A quarterly dividend of 1 1/4 per cent. was declared, and a surplus of nearly \$1,300,000 carried over.

There are several enterprises yet in embryo that will mature sooner or later when the holiday season is ended. The annual meeting of the miners has adjourned. Their deliberations were mainly confined to what is interesting only to local interests.

There is nothing in the outlook for the near future but what is of the most encouraging character. In all lines and among all industries there is a most hopeful and confident feeling. The evidence of solid advancement is so apparent that "he who runs may read."

## Cleveland.

CLEVELAND, OHIO, December 16, 1902.

**Iron Ore.**—The shipment from Escanaba has continued all the week, but the condition in the rivers connecting the lakes makes it impossible that this should continue for any length of time and the last cargo was shipped to-night. The movement away from the stock piles has been very heavy of late, having been started about a week ago. The amount of Ore in stock along Lake Erie, however, is not as large in proportion as the movement down the lakes this summer, as the railroads have taken away more than their proportion of the increase. The rates of carriage remained stable through the activity of the fall and while a few cargoes came down from Escanaba at \$1 it is hardly enough to make that rate a factor in the year. In fact a *résumé* of the season shows that the rates hardly changed from what they were established in the spring making this one of the most exceptional seasons that has ever been seen on the lakes. There is some talk now of fixing the prices for Ore for next year, but nothing other than a desultory discussion has been indulged in. The first preliminary meetings to the general meeting, at which the prices will be fixed, will be held shortly after the first of the year. It is now thought possible that a horizontal increase will be made in the prices, because the price of Pig Iron has advanced so greatly that the Ore producers feel that they ought to share in the prosperity of the times. This increase seems to be advised since the vessel interests are in revolt over the rate policy of the big companies of the past year and show an inclination to combine for the purpose of boosting the prices for the coming year. The total figures for the Ore movement for this year are not all in as yet, but it is evident that there will be about 28,000,000 tons of Ore in all brought down the lakes. With the increased consumption, for which 25 new furnaces which will be started before July 1 will be responsible, there is not need enough even then in this territory for all of the Ore that came down the lakes. This brings out an interesting explanation. Last spring, when the Ore conference was in session, the question of advancing the price of non-Bessemer old range and Bessemer Mesaba Ores was brought up. At that time the effect of the production of Ore in the New York, New Jersey, Pennsylvania and Virginia fields came into account and seemed to make it impracticable to make the advance. It seems altogether likely now that these fields will have no such weight another year, as the increased demands of the times on the various mines of those territories have been in excess of their possibilities and the Lake Superior region has been called upon for an enormous amount of Ore. It would be impossible to compute the exact amount, but it is figured out generally that the shipment into those fields must have been 2,000,000 tons during the present season. This leaves fully 2,000,000 tons in excess of the possible requirements in this territory, with all the new tonnage being counted in and this excess is set aside as a possible emergency supply, by which the Iron men have been putting great store. Such a stock will provide against any possible contingency next spring, such as delays in the opening of the season of navigation.

**Pig Iron.**—The market has taken a brace during the week which has just closed, and the last of the year discovers a lively demand for all grades of Pig Iron, which seems to give a better tone to the whole market, which, however, is more quiet than the Pig Iron trade seems to indicate. The Iron for spot shipment is in good demand, with a very great scarcity of it. In fact, there is much in the buying now to indicate an enormous consumption in this territory since the approach of invoice time disproves the theory that the Iron is being bought for a reserve. The urgency of new orders and the specifications on old contracts have been very active, and seem to indicate that the foundries themselves are being pushed for deliveries on what material they have sold. The buying for first half delivery has also increased during the week which is just closed, and old contracts have been reaffirmed by shipping orders in

large quantities. The selling has just started for third quarter delivery in this territory, the buyers here being considerably behind those in the Cincinnati, St. Louis and Chicago districts. Foundry grades are being sold for \$23 for No. 2 in the Valley for first half delivery and \$21 for the same grade, Valley furnaces, for third quarter delivery, with some few sales into the fourth quarter at the same price. Southern Irons are being sold here also to make up for the deficiencies of the home supply, and the price has remained fixed at \$20, Birmingham, for both first and second half delivery, although it is natural that very little business should have been done so far past July 1. There has been a little talk of importations, but this has been lost sight of in the rush of the present business and the activity of the home furnaces. There has been further talk also of sales of both Bessemer and Basic Pig Iron, but so far the Bessemer Association has done nothing past the first quarter of the year, and while the individual furnaces producing Basic have sold a large amount of material for second quarter delivery that movement is hardly general so far. In the present rush of business it is interesting to recall that the late sales of Bessemer were made on the low price of \$16.50 which, however, will hardly be duplicated when new sales are made. The Coke situation continues to be very annoying and the shortage is great. It is recalled now that one year ago the situation as to the Coke supply was identical with what it is to-day, in that the shortage of cars and Coke was quite noticeable. It is evident, however, that there is a greater shortage of Coke now than a year ago, and it is generally believed that unless some appreciable relief comes, which really seems impossible, there will be twice as many furnaces in this district closed during January, 1903, as during the same period of the present year.

**Finished Iron and Steel.**—The demand for all of the heavier grades of Steel seems to have suddenly stopped—at least for the time being. Just how much of this is due to the time of the year or how much of it is due to the state of affairs which developed immediately after the opening of December, it would be impossible to say now. It might seem, however, that the general condition of the market would indicate that a revival in this territory might be expected about the first of the year. The heavy buying of Pig Iron seems to indicate such a tendency. There are a few conspicuously weak spots in the market, but they accord with the season of the year. The Sheet trade, for instance, is very light. The market is steady at the old prices of 3.10c. to 3.25c. for No. 27 one pass cold rolled out of stock, with the same gauge at the mill in carload lots bringing 2.85c. to 2.95c. Galvanized Sheets are also bringing 3.70c. The Plate demand, as indicated above, is rather light, except in some of the smaller mills, which are finding a good deal of business. The prices obtained have been 1.70c. from the larger mills, 2c. from the smaller mills for quick shipment and 2.25c. for Sheared and 2.50c. for Universal Plates out of stock. The smaller producers of Structural are finding a more limited need for their material, both for the immediate present and for the period after the first of the year. They hope, of course, for revivals with the prospective opening of the spring building. As it is, the smaller mills are looking for orders and have shaded the prices. It is possible to get prompt shipment at some of them for 1.75c., while other mills are still holding for the old prices of 2c. and upward, according to the sizes. It is evident that the smaller Angles are very plentiful. The larger mills, however, are sold up for a good while ahead. The prices which the jobbers have been getting have ranged between 2.50c. and 3c., but most of them have sold out all of their supply for the time being, except a limited number of sizes. The larger mills are taking orders at 1.70c. There is a good deal of uncertainty as to the Bar situation. The prices have been flopping a good deal, and it seems as if a complete readjustment might be coming. There is even some talk of a differential after the first of the year on the Iron product. The market seems to be strong in the future, for the agricultural works have not come into the market so far and are not making any purchases. With all of this there is a grave question whether there is not a larger productive capacity than the demand warrants. This being the case the proposed readjustment of prices would not alter the situation in the least. The market at present is weak, and it cannot be seen that there is any change possible in the near future. The Bar Steel demand is strong, especially for Open Hearth, with the Bessemer contending with Billets for a market. The prices are: Bar Iron, 1.70c. to 1.75c., Pittsburgh; Bessemer Bar Steel, 1.60c., Pittsburgh; Open Hearth Bar Steel, 1.70c., Pittsburgh. The Billet market is wavering with hardly a change apparent. The supply of Bessemer is equal to all demands, if not in excess of them, with Open Hearth well sold up. The price ranges about \$30, although no sales are reported lately.

**Old Material.**—The demand for Scrap of the Mill grade has been the one thing that has added a tone of interest to the market all of this week. The other grades have been dull and even on that material, for which there is the best demand, the consumers are contending about the price and have insisted that there be a reduction, but without results.



The quotations are continued as follows: No. 1 Wrought, \$19, net; Iron Rails, \$25.50, gross; Iron Axles, \$28, net; Cast Borings, \$12, gross; Wrought Turnings, \$16.50, gross; Cast Scrap, \$19, net; Car Wheels, \$22.50, gross; Heavy Melting Steel, \$19, gross; Old Steel Rails, \$20, gross.

### St. Louis.

CHEMICAL BUILDING, December 17, 1902.—(By Telegraph.)

**Pig Iron.**—With the possible exception of a larger supply of spot Iron offering in this market changes in other directions are of minor importance. Individual transactions in excess of 500 tons are scarce. Southern furnaces as a rule are not inviting any large contracts, committing themselves for first half delivery. Less complaint is heard on the delivery question, and furnaces are showing steady improvement along this line. Prices are steady and firm, and have now reached a more normal basis, and it is a rarity to hear of more than \$1 difference between quick shipment and that for delivery at a future date. A very general quotation at this time for No. 2 Foundry ranges from \$19.50 to \$20.50, Birmingham, but we have heard of some instances where these prices have been shaded. We quote f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$24.25 to \$25.25
Southern, No. 2 Foundry.....	23.25 to 24.25
Southern, No. 3 Foundry.....	22.75 to 23.75
Southern, No. 4 Foundry.....	22.25 to 23.25
No. 1 Soft.....	24.25 to 25.25
No. 2 Soft.....	23.25 to 24.25
Gray Forge.....	22.25 to 23.25
Southern Car Wheel.....	to .....
Malleable Bessemer.....	to .....
Ohio Silvery, 3 per cent. Silicon.....	to .....
Ohio Strong Softeners, No. 1.....	to .....
Ohio Strong Softeners, No. 2.....	to .....

**Bars.**—The jobbing trade in this department of the market continue to report fair sales for Iron and Steel Bars, and the amount of new inquiry coming to hand shows up very well. Prices are generally firm. We quote from the mills: Iron Bars at 1.85c. to 1.95c., Steel Bars at 1.80c. to 1.90c. Jobbers quote Iron Bars at 2.25c. and Steel Bars at 2.25c., from store in small lots; 2.15c. in larger quantities.

**Rails and Track Supplies.**—There is no change to be reported in this department of the market, and conditions continue on a very flattering basis. A large amount of new inquiry is still turning up, and it is impossible for all of the demand to be satisfactorily cared for. We quote as follows: Splice Bars, 2.10c.; Bolts, with Hexagon Nuts, 3.25c. to 3.30c.; with Square Nuts, 3c. to 3.10c.; Spikes, 2.60c. to 2.75c.

**Angles and Channels.**—Small Angles and Channels continue in fair demand, and jobbers are in receipt of a moderate amount of new inquiry. For material of this class, 2.50c., base, is asked.

**Pig Lead.**—The market conditions continue along old lines, and while the market is very quiet prices are steady and firm. We quote Chemical at 3.97½c. to 4c. and Desilverized at 4.02½c. to 4.05c.

**Spelter.**—A very quiet order of business rules at this time in the Spelter market, but prices seem to be on a fairly firm and steady basis. We quote 4.60c. to 4.65c.

### Pittsburgh.

(By Telegraph.)

PARK BUILDING, December 17, 1902.

**Pig Iron.**—Not much Pig Iron is moving, but the market is strong. Recently the United States Steel Corporation opened up negotiations with the Bessemer Furnace Association for the purchase of a round block of Bessemer Iron for delivery in the second quarter of next year, but these negotiations have been called off and the corporation will not buy any Iron for the present at least. The absorption of the Union Steel Company by the United States Steel Corporation will give the latter one active stack at Sharon, making about 400 tons a day, with two more building at Sharon and two at Donora. When the four stacks under way have been finished the five furnaces will give the corporation very close to 2500 tons of Iron a day, and probably means that the corporation will not build any more blast furnaces other than the two now under construction, one at Bessemer and one at Rankin. It is possible, however, that the fourth stack may be built at Youngstown to give the Ohio Works of the National Steel Company more Iron, which the plant needs. Bessemer Iron for delivery in first half of next year is held at \$21 to \$21.50, at furnace, while for the first quarter up to \$22 is quoted. The Coke situation is still very bad, and only three stacks in the Mahoning Valley have been running regularly, these being the Girard, Brier Hill and Youngstown

Steel. From 6 to 10 or 12 stacks are continually banked, waiting for Coke. There is a fair demand for Forge Iron, which is held at \$20.50 to \$20.75, Pittsburgh. Some foreign Middlesbrough No. 3 Foundry Iron is coming into this market at \$21.50 to \$22, delivered.

**Steel.**—Not much Steel is changing hands, and the market will be quiet until after the first of the year. Prices are firm and Bessemer Billets are held at \$29, Pittsburgh. Open Hearth Billets are \$30 to \$31, Pittsburgh, for Ordinary Carbons.

(By Mail.)

The purchase of the Union Steel Company by the United States Steel Corporation means the elimination of a large amount of present competition in Rods, Wire Nails and Wire, and prospective competition in Steel Rails, Plates and Structural Material, as it is understood the Union Steel Company have plans under way looking to the building of mills at Donora and Sharon for rolling these products. The Iron trade continues somewhat quiet, but the market is strong, especially on Pig Iron, Steel and Sheet Bars. There is not likely to be much change in the situation until after the first of the year, when a material improvement in general demand is expected. The new freight rates on Iron and Steel to go into effect on January 1, 1903, are set forth elsewhere in this issue.

**Ferromanganese.**—There is practically nothing doing, buyers being covered. We quote English Ferro at \$50 in large lots and \$52.50 in small lots, delivered. English Ferro comes unpacked and German Ferro, which is usually shipped in casks, commands a higher price than English.

**Rods.**—The market continues somewhat quiet, and we quote Bessemer Rods at \$34.50 to \$35, Pittsburgh. Open Hearth Rods are held at about \$36, Pittsburgh.

**Spelter.**—Prices of Spelter continue to decline, and prime Western has been quoted as low as 4.75c. to 4.77½c., Pittsburgh, for prompt delivery. Buyers are not taking hold, believing that prices will be still lower.

**Plates.**—We note a continued heavy demand, and a large number of Ore vessels and other boats will be built next year, which will require an enormous tonnage of Plates. All the leading mills are sold up for months ahead, and are refusing to book contracts for Plates, except for delivery late in 1903. Mills that can make reasonably prompt delivery have no difficulty in getting 1.85c. to 2c. for Plates. A local interest is understood to be holding for 2c. minimum. A meeting of the Plate Association is to be held this week in New York, but it is not expected that any important action will be taken. We continue to quote Plates for reasonably prompt delivery at 1.85c. to 2c. at mill. For extended delivery, prices are as follows: Tank Plate, ¼-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plate more than 100 inches wide, 5c. extra per 100 lbs. Plate 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms net cash in 30 days.

**Muck Bar.**—The market continues exceedingly quiet and it is not likely there will be any buying until after the first of the year. Prices are weak and best local makes of Muck Bar are offered at \$33, f.o.b. Pittsburgh.

**Rails.**—In the past week or two contracts for fully 50,000 tons of Rails have been placed for delivery late in 1903, and inquiries are in the market for 50,000 tons more. Canadian and Southern railroads will likely place large tonnage with foreign makers, as domestic mills cannot make deliveries wanted. We quoted at \$28, at mill, for Standard Sections.

**Sheets.**—We can report a material improvement in demand for Black Sheets and the tone of the market is fairly firm. Some mills have entered orders recently for a good sized tonnage of Black Sheets and at prevailing prices. The situation in Galvanized Sheets is still unsatisfactory, and on good sized orders mills are quoting 75, 10 and 5 off on Nos. 27 and 28. We quote Nos. 22 and 24 Black Sheets, box annealed, one pass through cold rolls, at 2.45c.; No. 26, 2.55c.; No. 27, 2.65c., and No. 28, 2.75c. These prices are for carloads and larger lots, buyers charging the usual advances on small lots from store. On Galvanized Sheets we quote Nos. 26, 27 and 28 at 75, 10 and 2½ to 75, 10 and 5 per cent. off for carloads and larger lots. In net prices these are equal to about 3.25c. for No. 26, 3.42c. for No. 27, and 3.70c. for No. 28. These prices apply only on car-



loads and larger lots and are f.o.b. at mill. On less than carloads jobbers charge the usual advances.

**Structural Material.**—So far this month the leading Bridge Company have taken contracts for over 25,000 tons of bridge work. The railroads are placing contracts much earlier this year than usual. Other large work given out during the week was the elevated tracks of the Terminal Railroad Association at St. Louis, 8600 tons, an extension to the elevated tracks at St. Louis, about 2000 tons, and some small work involving 800 tons; a local building was also placed, calling for about 1500 tons. There is still some delay in getting deliveries on Plates and Z Bars. Prompt deliveries can be had in Angles. Beams and Channels for early shipment continue to command premiums in prices. For extended delivery we quote as follows: Beams and Channels up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.60c., half extras, at mill; Universal and Sheared Plates, 1.60c. to 1.85c.

**Bars.**—A fair amount of tonnage is being placed in both Steel and Iron Bars, but it is not as large as the manufacturers would like to have it. Specifications on contracts are coming in fairly well. It is believed the volume of business in Bars will be materially larger after the first of the year, as it is certain a good many buyers are postponing placing contracts. We quote Iron Bars at 1.70c. to 1.80c. in carloads and 1.85c. in small lots, half extras, as per National card. We quote Steel Bars at 1.60c., at mill. All specifications for less than 2000 lbs. of a size subject to the following differential extras: Quantities less than 2000 lbs., but not less than 1000 lbs., 0.10 per lb. extra. Quantities less than 1000 lbs., 0.30 per lb. extra, the total weight of a size to determine the extra regardless of length.

**Merchant Steel.**—We note a demand, and some recent contracts have been placed, for Spring and Machinery Steel for delivery next year. There is only a fair demand for Crucible Steels, and prices are being shaded more or less. Carload prices, f.o.b. mill, are as follows: Tire, 2.15c. to 2.25c.; Spring, 2.25c. to 2.35c.; Toe Calk, 2.30c. to 2.40c., base; Sleigh Shoe, 2.15c. to 2.25c. Differentials are as follows: Less than 2000 lbs. of a size and not less than 1000 lbs., 10c. advance; less than 1000 lbs. of a size, 30c. advance; Cold Rolled Shafting is 47 per cent. off in carloads and 42 per cent. in less than carloads delivered in territory east of the Mississippi and north of the Ohio rivers. Tool Steel is 6½c. to 10c. for ordinary grades and 12c. and upward for special grades.

**Skelp.**—The market continues very quiet, and is not likely to show much improvement until after the first of the year. Some of the small Pipe mills find it impossible to buy Skelp at present prices and compete with the larger mills that have their own supply. We quote Grooved Iron Skelp at 1.90c. to 1.95c.; Sheared, 2c. to 2.05c., and Grooved Steel Skelp at 1.90c. to 1.95c., f.o.b. Pittsburgh, or 2 per cent. off for cash in 30 days.

**Merchant Pipe.**—A good volume of business is being placed, much larger than this time last year. The market is firm, only occasional concessions being made by outside mills. Pittsburgh basing discounts in carloads are as follows:

	Merchant Pipe, Steel.		Merchant Pipe, guaranteed weight.		Full weight, guaranteed weight.	
	Blk. Galv.	Blk. Galv.	Wrought Iron.	Steel Pipe.	Wrought Iron.	Blk. Galv.
¼, ½ and ¾.....	68	58	65	55	67	54
1.....	70	60	67	57	69	56
¾ to 6.....	75	65	72	62	74	61
7 to 12.....	73	63	70	60	72	59
Plugged and Reamed:						
1 to 4.....	73	63	70	60	72	59
Cut 3 to 6 feet.						
¼, ½ and ¾.....	63	52	60	49	62	48
1.....	65	54	62	51	64	50
¾ to 6.....	71	60	68	57	70	56
7 to 12.....	69	57	65	54	68	53
Cut to 6 feet and longer:						
¼, ½ and ¾.....	64	53	61	50	63	49
1.....	66	55	63	52	65	51
¾ to 6.....	72	61	69	58	71	57
7 to 12.....	70	58	66	55	69	54
Extra Strong, Plain Ends:						
¼ to 8.....	69	59	65	55	68	54
Threads only.....						
Same as Plain Ends, plus 1¼ per cent., net.						
Threads and Couplings. Same as Plain Ends, plus 3 per cent., net.						
Double Extra Strong:						
¼ to 8.....	61	51	57	47	60	46
Threads only.....						
Same as Plain Ends, plus 2 per cent., net.						
Threads and Couplings. Same as Plain Ends, plus 3 per cent., net.						

NOTE.—Orders for less than carloads will be charged at 12½ per cent. advance. Extra and Double Extra Strong cut lengths, lower random discounts by 10 per cent. net for 6 feet and longer, and 15 per cent. net for 3 to 6 feet.

**Boiler Tubes.**—Demand is mostly for small lots, as the large orders were placed some time ago. Discounts are as follows:

Iron Boiler Tubes.	
1 to 1½ inches and 6 to 13 inches.....	36½ %
2½ to 5 inches.....	45½ %
1½ to 2½ inches.....	35½ %

**Scrap.**—While a very limited amount of Old Material

is moving, prices are firm. We quote Heavy Melting Stock at \$21 to \$21.50 in gross tons; No. 1 Cast Scrap, \$18.50 to \$19, gross tons; Cast Iron Borings, \$11.50, gross tons; No. 1 Wrought Iron Scrap, \$20.50 to \$21, net tons.

**Coke.**—Output of Coke last week was about 20,000 tons larger than the previous week. The railroads still continue short of motive power, and it will be some months before the situation is permanently relieved. There promises to be considerable activity next year in the building of Coke ovens in the Connellsville region, as a number of outside furnace interests have recently secured large tracts of Coking lands and will start the building of ovens early in the year. Prompt Furnace Coke continues to command from \$5 to \$6 a ton, while for contracts running through first half and all of next year, from \$3.75 to \$4 a ton is being paid. Foundry Coke brings \$4.50 to \$5 a ton on contracts.

Rogers, Brown & Co. have engaged George P. Bassett, Jr., to act as their representative for Pittsburgh and vicinity, who will have his office in the Park Building, Pittsburgh, Pa. Mr. Bassett has been for many years prominently identified with the Iron trade and has practical knowledge and experience. It is expected that in his hands the already extensive local business of the firm will largely increase. The list of brands of Pig Iron and Coke which they handle includes every quality required by the foundries, rolling mills and Steel works.

### Pennsylvania Railroad to Enter New York City.

On Tuesday last the Board of Aldermen of New York passed the franchise giving the Pennsylvania Railroad the right to enter the city. The plans contemplated tunneling both the East and Hudson rivers and the building of an immense station. Three tunnels will pass under the Hudson and two under the East River, all to be single track. These will converge at a central station at Thirty-second street and Seventh and Ninth avenues, which will be 500 feet in width and 1500 feet in length. For this privilege the company pay a yearly trackage charge of 50 cents per lineal foot of track, to be doubled after ten years, and in addition will pay rentals for subsurface stations, for vault privileges, &c. These amounts are to be adjusted at the end of every 25 years. The cost of the work is estimated at \$50,000,000.

This measure has been before the Aldermen for a long time. It was held up by advocates of the eight-hour working day, who insisted that the company should agree to that proposition. This they flatly refused to do from the start, taking the ground that, as they assumed complete responsibility for the enterprise, they would not be hampered by any labor clause whatever.

Judge E. H. Gary, chairman of the Executive Committee of the United States Steel Corporation, last week gave out some figures that serve to offset several recent pessimistic statements concerning the iron and steel industry. He says the unfilled orders on the books of the corporation at the present time aggregate 5,280,000 tons, the largest in the history of the company. The figures just given out compare with 4,968,000 tons reported a month ago, an increase of 312,000 tons within that period.

The annual tour of inspection by officials of the United States Steel Corporation was concluded on Saturday, December 13. That day was spent at Lorain, Ohio, viewing the site for the large tube mill which is to be built at that place, and which will be supplied with steel by the Lorain Steel Company. No official statement was issued by any members of the inspection party, except that recommendations would be made for new works, at various places, to the directors of the United States Steel Corporation and these would be acted upon in a short time.

A. V. Kaiser & Co. of Philadelphia have purchased the entire real estate and plant of the Cuban Steel Ore Company at Cherioveco, Cuba, which includes 73 miles of telegraph wire, rails, three locomotives, 100 cars, steel viaducts, bridges and piers, scows, hoisting engines, cableways, 46 houses and 1400 acres of land, also 26,000 feet of 3-inch water pipe.

## Metal Market.

NEW YORK, December 17, 1902.

**Pig Tin.**—Speculative purchases made by operators on this side sent the market upward. The purchases were made chiefly in futures, but naturally the spot prices shared the benefit and rose also. Although directed from this side the moves were made in London, the market there advancing £4 2s. 6d. on spot and £4 10s. on futures, thereby creating a premium of 7 shillings 6 pence on futures. The closing prices in London to-day were £116 7s. 6d. for spot, and £116 15s. futures. The London market yesterday reached £117 for spot and the price here was then 26c. But the feeling at the close yesterday was not so strong and to-day's first cable showed a reduction in spot to £116 12s. 6d. All day to-day the tone of the markets has been easier, with the result of easier prices, as above named. The market here on spot, December and January, was 25.75c. bid, and 25.87½c. asked, at the close. February and March sold at 25.70c. and 25.75c. and closed 25.75c. to 25.80c. April, May and June was 25.50c. bid, and 26c. asked. It will be seen that a strong effort is being made to make the best of the situation and raise futures so as to encourage buying. Consumers have for many weeks been buying only on a hand to mouth basis, and as this demand has not been very large, the situation has grown steadily worse. As yet consumers have not taken a hand in the new developments and are holding out of the market just as heretofore. Arrivals so far this month amount to 1187 tons, with afloats estimated as 2935 tons. The half monthly shipments from the Straits were 2115 tons, as against 1770 tons of last year. Available supplies here are now so large that consumers are not worrying on this score.

**Copper.**—A hypothetical boom has been started by a number of Copper merchants. They are endeavoring to create the impression that prices have advanced, but actual conditions do not warrant the acknowledgment of their figures as being the market quotation. It has been reported that Lake sold from 11.62½c. all the way to 11.87½c., and that Electrolytic and Casting were sold in a small way as high as 11.62½c. It is possible, however, to secure the metal at lower prices, and there has been no increase of demand. The nominal figures of the Metal Exchange are more universally accepted as stating the market. They are unchanged from last week, and as follows: Lake, 11.65c.; Electrolytic and Casting, 11.45c., and Standard, 10.75c. There was an entire absence of business in the New York Metal Exchange throughout the week. London has fluctuated somewhat, and although lower to-day than at other times during the week, the closing prices show a slight advance over last week's figures on spot, but a decline on futures and Best Selected, and are as follows: Spot, £50 11s. 3d.; futures, £51; Best Selected, £54 10s. The exports amount to 5800 tons so far this month.

**Pig Lead.**—Has scored a slight advance in London, where the price is now £10 16s. 3d., but is without change in this market, the official price still being 4.12½c. for spot and 4.10c. futures.

**Spelter.**—A continued decline is to be noted. The market is very dull and the tone easy. Spot is now quoted 4.90c., December, 4.85c.; January, 4.80c., and St. Louis very easy at 4.60c., sellers. London is unchanged at £19 17s. 6d.

**Antimony.**—Is unchanged and easy at 8½c. to 8¾c. for Cookson's, 7¼c. to 7¾c., Hallett's and other brands, 6¾c. to 7c.

**Nickel.**—No change is noted. Large quantities down to ton lots are now quoted at 40c. to 47c. per lb., according to size and terms of order. Smaller lots are quoted as high as 40c., according to quantity.

**Quicksilver.**—The market is quiet and unchanged, the ruling quotations being \$48 per flask of 76½ lbs. each in lots of 50 flasks or more. London is unchanged at £8 15s.

**Tin Plate.**—The absorption of the Union-Sharon interests as reported in another column is the only important happening in the Tin Plate trade. This gives the United States Steel Corporation or American Tin Plate Company complete control over the Sharon Tin Plate product, which had previously been controlled only by a limited contract. The expression of the trade is that conditions in this market are now stronger, and the competition still outside is not very generally feared. Quotations are unchanged, being based on present official prices of \$3.60 per box of 14 x 20 100-lb. Cokes, f.o.b. mill, and \$3.79, New York delivery.

These prices, it is understood in the trade, will hold until April. The Swansea market is unchanged.

John Stanton reports the Copper production in the United States and of the foreign reporting mines and United States exports as follows, in gross tons of 2240 lbs.:

	Reporting mines.	Outside sources.	Total product.	Product foreign mines.	U. S. exports.
First half 1895....	70,612	9,100	79,712	42,484	34,215
Second half 1895....	84,885	6,600	91,485	43,674	30,507
Total 1895.....	155,497	15,700	171,197	86,178	64,722
First half 1896....	94,180	7,200	101,380	42,255	58,216
Second half 1896....	95,314	7,200	102,514	43,941	67,287
Total 1896.....	199,494	14,400	203,894	86,196	125,503
First half 1897....	103,651	5,000	108,651	44,263	64,870
Second half 1897....	100,555	6,900	107,455	44,007	64,340
Total 1897.....	204,206	11,900	216,106	88,270	129,210
First half 1898....	112,687	7,800	120,487	40,880	68,284
Second half 1898....	103,535	10,250	113,785	43,674	76,831
Total 1898.....	216,222	18,050	234,272	84,554	145,115
First half 1899....	111,987	12,500	124,487	43,629	56,460
Second half 1899....	118,818	18,900	137,719	45,611	63,351
Total 1899.....	230,806	31,400	262,206	89,240	119,811
First half 1900....	114,177	20,400	134,577	43,153	90,747
Second half 1900....	113,810	20,400	134,104	46,278	63,335
Total 1900.....	227,987	40,800	268,681	89,431	160,082
First half 1901....	112,794	20,600	133,394	46,847	50,027
Second half 1901....	110,561	21,300	131,861	53,394	44,339
Total 1901.....	223,355	41,900	265,255	100,241	94,366
First half 1902....	117,748	22,700	140,448	52,546	97,960
July, 1902.....	22,749	4,000	26,749	9,210	11,733
August, 1902.....	23,196	*2,100	25,296	9,504	12,429
September, 1902....	23,688	2,100	25,788	9,155	13,183
October, 1902.....	24,152	2,100	26,252	9,707	12,515
November, 1902....	22,997	2,300	25,297	9,077	10,915

\* The decrease in "Outside Sources" this month and following is caused by the largest of them becoming "Reporting Mines."

## New York.

NEW YORK, December 17, 1902.

**Pig Iron.**—The local market has been lifeless, there being no buying either for prompt or for forward delivery. Nothing is doing in foreign Iron, but we note that some foreign Basic is being offered for the second quarter of 1903. For the first half of 1903 the following nominal quotations are made: Northern Iron, at tidewater, No. 1 X, \$24.50 to \$25; No. 2 X, \$22 to \$22.75; No. 2 Plain, \$21.50 to \$21.75. Tennessee and Alabama brands, in New York and vicinity: No. 1 Foundry, \$25 to \$25.50; No. 2 Foundry \$23 to \$24; No. 3 Foundry, \$22.50 to \$23.

**Cast Iron Pipe.**—Manufacturers report a very unusual condition of trade. During the past week they have had more inquiries for spring delivery than they have ever before had in a month at this season. Consumers either fear an advance in prices or are convinced that lower prices are not to be expected. The Troy contract referred to last week was awarded to the United States Cast Iron Pipe & Foundry Company. Prices continue as recently quoted: 6-inch, \$36, and 8 to 12 inch, \$35.50, gross ton, at tidewater.

**Steel Rails.**—The domestic mills report very little business lately. The Stillwell orders which have been referred to widely in the press were really placed a long time since, 60,000 tons going abroad. The trade has been much interested in the troubles of the Consolidated Lake Superior Company, who control the Algoma Steel Company. The latest reports are that the mill will start up again on an order for 8200 tons. We continue to note \$28 at Eastern mill for Standard Sections.

**Finished Iron and Steel.**—The demand for Plates has been inclined to quietness in this locality, but nevertheless enough business is coming along to keep sales agents in good spirits. The mills are well supplied with orders coming from other sections. Their output is increasing as they are receiving Coal much more freely. Deliveries are also getting into better shape, transportation service having improved somewhat. The American Bridge Company have secured St. Louis contracts aggregating 10,600 tons, largely for viaduct work. Inquiries are good, promising further tonnage shortly. Western prospects in the building trade are very encouraging. A great deal of work is in sight in that quarter. In this vicinity the building business is rather quiet. We quote at tidewater, as follows, but for small lots and prompt delivery higher prices are being obtained for Structural Material: Beams, Channels and Zees, 2c. to 2.25c.; Angles, 2c. to 2.25c.; Tees, 2c. to 2.25c.; Bulb Angles and Deck Beams, 2.10c. to 2.25c. Sheared Steel Plates are 2.10c. for Tank, 2.20c. for Flange, 2.35c. to 2.40c. for Fire Box. Refined Bars are 1.90c. to 2c.; Soft Steel Bars,



1.80c. to 1.90c. Foreign Beams are 1.75c. and Angles 1.80c., ex-ship, New York, in large lots.

**Old Material.**—Consumers are out of the market for everything, except Cast Scrap, in which transactions are confined to small quantities. Heavy Cast is firmly held, and in some instances buyers have been obliged to pay a little more than our quotations. In rolling mill and Steel stock the situation is peculiar. Values would be sacrificed if any pressure was made to effect sales. On the other hand, the railroad companies and other holders seem to have confidence in the future, and are not willing to make concessions. Dealers who have sold short and are obliged to cover thus find that they are compelled to pay more than they think market conditions really warrant. Selling quotations are as follows, per gross ton, f.o.b. cars in this vicinity:

Old Iron Rails.....	\$22.00 to \$22.50
Old Steel Rails, long lengths.....	20.00 to 20.50
Old Steel Rails, short pieces.....	18.00 to 18.50
Relaying Rails, heavy sections.....	29.00 to 30.00
Relaying Rails, lighter sections.....	33.00 to 35.00
Old Car Wheels.....	20.00 to 20.50
Old Iron Axles.....	25.50 to 26.00
Old Steel Car Axles.....	24.50 to 25.00
Heavy Melting Steel Scrap.....	18.00 to 18.50
No. 1 Railroad Wrought Scrap Iron.....	20.00 to 21.00
Track Scrap.....	18.00 to 18.50
Busheling Scrap.....	14.00 to 14.50
No. 1 Machinery Cast Scrap.....	19.00 to 20.00
Stove Plate.....	13.00 to 14.00
Wrought Turnings, delivered at mill.....	16.00 to 16.50
Cast Borings, delivered at mill.....	9.00 to 9.50

### The Ampere Electrochemical Company.

The development of electric power in large units at Niagara Falls has been found a great inspiration to inventive minds, and there is one company established on the lands of the Niagara Falls Power Company whose reason for existence is that they delve deep down into the mysteries of electrochemistry for the purpose of bringing to light concealed truths in order that the processes discovered or developed may be patented and operated for the benefit of mankind. This company are the Ampere Electrochemical Company, and a remarkable fact about them is that they are not an operating company but an experimental company, and their object is to bring new electrochemical processes to the point of commercial application. In other words, they are more or less of a patent factory. The founders of this company are Prof. F. B. Crocker, C. A. Doremus, S. S. Wheeler and C. S. Bradley, and they have associated with them A. H. Buch, D. R. Lovejoy, H. E. Knight, N. Thurlow and Charles B. Jacobs. Originally the company located at Ampere, N. J., but about four years ago the experimental station was moved to Niagara Falls.

That the company have a very broad field in which to operate and are in position to do a vast amount of good for the commercial and industrial future of the country is evident from the processes they have already developed and placed in satisfactory commercial operation. There are already two or three companies operating large plants at Niagara that can trace their birth to the results of this peculiar business of seeking out electrochemical secrets. The method of producing artificial corundum by fusing bauxite is a process patented by Charles B. Jacobs and sold to the Norton Emery Wheel Company, which latter company have a factory at Niagara. The process of producing nitric acid from nitrogen and oxygen was traced out by D. R. Lovejoy, and the Atmospheric Products Company have just erected a building on the property of the Niagara Falls Power Company to serve as the machine shop where apparatus for equipping a large factory will be made. N. Thurlow discovered a process for producing camphor from turpentine, and at Port Chester, N. Y., a plant that will produce a ton of camphor a day is being equipped. The United Barium Company operate under a patent by C. S. Bradley and C. B. Jacobs. The plant of the United Barium Company is also on the lands of the Niagara Falls Power Company. The process of the company works barium sulphate into other barium salts. Barium hydrate is used for the purification of water, it being an effective softener for boiler waters.

It is also used in the paint trade for making white paints and in the sugar trade for recovering barium saccharate. The mother liquors are possible of numerous applications.

The ramifications of the experts associated with the company are extensive, and the company are hopeful of developing many great things of considerable commercial value. Starch is one of the possible products of electrochemistry in the near future, and artificial rubber is another. In the research for the secret of the latter product it is understood efforts are being made by chemical processes to duplicate from oils the gum of the rubber tree. Results are understood to be most encouraging, and in the ever high price of rubber there is much inspiration to search to the greatest depths for a secret so thoroughly valuable. The manufacture of cyanides, silicides and of ammonia is also being considered and treated with great hope of success.

To such an industry, if such it may be termed, Niagara Falls offers fascinating advantages. Electric power in any quantity and at any voltage is there obtainable, and the supply is constant the year around. Any process may be made continuous as long as desired with a certainty that there will be no falling off of the electric current supply.

The men connected with the Ampere Chemical Company say little about their work and of what new hopes to which the constant experiments give rise. Every man is thoroughly ambitious, and among them there is a truly remarkable combination of forces. There is the college professor, the old inventor who knows all the ropes that guide to success in the patent office. There are business men, electricians and carefully trained chemists, each one alert to the possibilities afforded by the conditions of the world, and each persevering to a high degree. No hint, no theory is considered too insignificant to be followed by these men of strange electrochemical research, and every path that opens before them is traced to the end, whether the experimental journey bring success or failure. When master minds advance ideas they are picked up and followed as carefully as though success was assured. The judgment of the several minds, the thought and consideration that all give to the problems hoped to be solved, is a mighty power of strength.

It is easy to conceive that success in such a field may come as quickly by accident as by intent. To believe this it is only necessary to recall how acetylene gas was first by accident observed arising from a refuse pile at the small electric furnace station at Spray, N. C. Now the industry of calcium carbide manufacture practically belts the world. Of the discovery of the process for making camphor it is told that one day Mr. Thurlow was making some experiments with turpentine and oxalic acid. Treating the mixture in some manner, with no particular object in view, it is said he observed the odor of camphor, and analysis proved that real camphor had been obtained. The process is said to be entirely chemical, but the success means a lessening of an Oriental industry.

The possibilities of invention before men that apply themselves in this way are truly marvelous, and the world need express no surprise no matter how remarkable their inventions appear. It is generally recognized that the field of synthetic electrochemistry is destined to become one of the greatest businesses of the world. The Falls of Niagara were created for a purpose. That purpose may and may not be only to serve as an eye feast for mankind, giving pleasurable thoughts and wild fancies in their delightful fascination, but it is very likely that the conditions wrought by nature at Niagara were designed to develop man's ingenuity in this and future ages in the development and application of the mighty force there obtainable. Lord Kelvin said: "I look forward to the time when the whole water from Lake Erie will find its way to the lower level of Lake Ontario through machinery doing more good for the world than that great benefit which we now possess in the contemplation of the splendid scene which we have presented before us at the present time by the waterfall of Niagara."

## The New York Machinery Market.

NEW YORK, December 17, 1902.

Very little of interest has developed in this market during the last week. That purchasers are holding off until after the first of next month there is now no doubt. The interesting phase of this, however, is that they are actually holding something back. There are unmistakable signs that a nice demand will set in early next year. Machinery merchants in all lines have during the last week added to the information which they have been sending to prospective purchasers, who state that they do not wish to place their orders until after the close of the year. A little business has been actually closed, but on the whole orders thus far this month have been scarce. Prices are unchanged and show no signs of weakening. A large machine tool concern in lower Liberty street, who have not advanced their prices this year, state that they will probably be obliged to advance about 5 per cent. very shortly. This is the only statement as to change in prices which we have heard anywhere in the machinery trade.

One good sized machine tool deal is now coming to a close. The International Steam Pump Company have placed a few orders in connection with the new equipment for their Snow plant during the last two or three days, and state that the remainder of the contracts will be awarded within the next ten days. There was a report in the street that a large portion of this equipment would not be placed at this time, but this has proved unfounded. Purchasing Agent Colling of the company stated to a representative of *The Iron Age* that all of the tools included in the recent specifications would be purchased before the first of next year. The opinion of those in the trade who have followed the matter closely is that the makes specified will doubtless be purchased in every instance. All of these tools may be termed as special, as there are numerous changes from existing standard sizes.

We are advised on good authority that the recent Westinghouse purchases were only a very small proportion of what is intended. The present works, it is said, will be doubled in size, and consequently it will be necessary to purchase very heavily in the machine tool market.

The New York Central Railroad are said to be preparing a big list of machine tools which they will purchase early next year. They will be for a new system of car and repair shops to be built at Jersey Shore, Pa. The project, we are informed, contemplates the abandoning of the Corning shops and making the Jersey Shore shops the principal ones on the Eastern division of the road.

The Standard Motive Power Company, whose principal offices and plant are to be erected at Canal Dover, Ohio, and whose New York offices are at 60 Broadway, will be in the market early next year for a very large equipment of machinery. The company will manufacture locomotives, motor cars and automobiles under the patented system of Arthur P. Dodge, who is superintendent for the company. The machinery subject is now before the officers of the company. At present it is intended to purchase machinery for fitting out a complete machine shop, 110 x 350 feet, an erecting shop, blacksmith shop, boiler shop and power house. The power plant equipment will aggregate 1000 horse-power, divided into four units of 250 horse-power each. Ultimately the plant will consist of 15 buildings, the largest 500 feet long. It is intended to expend about \$2,000,000 on the entire plant. The company are capitalized at \$10,000,000. Howard MacNutt is president of the company; Andrew Deis, vice-president; W. H. Hoar, secretary and treasurer; Thornton Chase, assistant secretary and treasurer, and Waldo G. Morse of 10 Wall street, New York, is solicitor.

In the line of power plant equipment and elevating and conveying machinery the largest matter now up is the apparatus for the great grain elevator which the New York Central Railroad are to build at Weehawken, N. J. Specifications asking for bids on the boiler and power plant are now out in the trade. Orders will, however, not be placed until after the close of this year. The power plant is to be of about 1500 boiler horse-power. The equipment throughout will be of the most modern types. E. B. Kattie, mechanical engineer, whose offices are in the Grand Central Station, New York, is handling the matter for Chief Engineer Wilgus.

Contracts for the equipment of the Brooklyn Institute of Arts and Science, Eastern Parkway, Brooklyn, and the Kings County Buildings, Clarkson street, Brooklyn, have not been placed as yet. The former plant will require 800 horse-power and the latter about half that amount. A rather unusual occurrence was noted in the bidding of the latter job. The contract for the generating sets amounts to about \$22,000, between the highest and lowest bids there was only a difference of about \$300. The award has not been made as yet, owing to some irregularity of one of the proposals.

The contract for the additional 200 horse-power generating set for the Hibbard-Rodman & Ely Safe Company of Plainfield, N. J., was awarded to McClave, Hamilton & Co. of 85 Liberty street.

The International Navigation Company are equipping

their piers with electric hoists. They awarded a contract for some 15 hoists to the Lidgerwood Mfg. Company. These will be installed on the new steel piers at Philadelphia. They are now arranging for a similar installation for their New York piers. No electric generating apparatus will be required, as they will, for the present at least, purchase their power from the local central electric light and power station.

The Lidgerwood Mfg. Company have also captured several large orders for cableways for export shipment. One of these was awarded by the Manaus Harbor Corporation, Limited, of London. The apparatus is to be installed at Manaus, Brazil, about 1000 miles up the Amazon. The apparatus is for the loading and unloading of vessels, an arrangement of some sort being necessary owing to the rise and fall of the river during the wet and dry seasons. There are to be three cableways running from steel shore towers to steel towers erected on a large steel floating pontoon, anchored about 400 feet off shore. The vessels will be moored to the pontoon and their cargoes transmitted to the shore by means of the cableways. There will also be a number of Lidgerwood electric hoists and an electric plant, which will be equipped with a 200 horse-power Allis-Corliss engine, Westinghouse generator and Lidgerwood locomotive type boiler. The entire contract amounts to about \$60,000.

Another large contract which the Lidgerwood Company obtained is for two large traveling cableways which will be used by the New South Wales Government in the erection of a dam which is a part of the new water supply system of Sydney. These cableways will be of 1100 feet span and will carry a 4½-ton load. Each will be equipped with large electric hoists and there will be numerous small electric hoists. The amount of this contract is about \$20,000.

The New York Smelting & Refining Company of 393 West Twelfth street, New York, are in the market for a considerable quantity of machinery of a miscellaneous character.

The Lapointe Machine Tool Company of Boston have been organized to manufacture adjustable reamers and internal splining machines. The company have recently taken out several patents and established their plant on November 1 last at 35 Hartford street. J. N. Lapointe, formerly connected with the Becker-Brainard Milling Machine Company of Hyde Park, Mass., is president and manager, and H. Potheary is secretary and treasurer.

## Iron and Industrial Stocks.

At the time of going to press last Wednesday another period of liquidation began in the stock market which continued for three days. The strongest stocks on the list suffered as well as the weakest. The main underlying cause of the weakness was the money situation, but added to this was a fresh element of uneasiness arising from the fear that this country might be involved in trouble with foreign countries as a result of the attack on Venezuela by Great Britain and Germany. Liquidation was especially heavy in the United States Steel stocks, and transactions in these stocks were on an enormous scale. In the five days running from Thursday to Tuesday, inclusive, 320,200 shares of common and 133,900 of preferred were traded in. The lowest price recorded on common was 29¼, and on preferred 79. Cast Iron Pipe preferred ran off from 50 to 46, Tennessee Coal from 55 to 49½, Republic preferred from 77 to 74¼, Pressed Steel common from 58 to 55, Colorado Fuel from 81½ to 75, Cambria Steel from 26¾ to 23, American Locomotive common from 27 to 23½ and American Car & Foundry common from 34 to 32. The most sensational decline, however, was in Consolidated Lake Superior, known as the Clergue enterprise, which declined heavily in both issues on the 11th, the common stock breaking 10¼, or from 20 to 9¼, and the preferred 18¼, or from 68¼ to 50, caused by the directors rescinding the declaration of 1¼ per cent. quarterly dividend on the preferred, together with the report that the company were seriously in need of additional capital. This matter was arranged within a day or two and the stocks recovered part of their loss.

The general stock market improved decidedly on Monday, when announcement was made that leading New York banking interests had raised a fund of \$50,000,000 to supply the pressing demand for money. United States Steel stocks further improved on Wednesday as a result of the acquisition of the Union and Sharon Steel companies. The statements relating to the financing of the purchase are not quite clear. The exact figures are not available now since the work of the appraiser has not been completed. It is not stated whether the underlying bonds of the Sharon Company and its constituent concerns will be also guaranteed as a separate issue, the amount being approximately \$3,250,000. Nor is it quite clear for what purposes the



\$10,000,000 cash is required, since the Sharon Company has only two additional blast furnaces to build, while the uncompleted plant of the Donora Company consists of two blast furnaces and an open hearth steel plant of 12 furnaces of 50 tons capacity each. It is generally understood that the new liability of approximately \$2,250,000 per annum is in advance of the preferred stock dividends. Whether the plants themselves will earn this always depends, of course, upon whether their production is needed and can be sold at profit.

**Sloss-Sheffield Iron & Steel Company.**—The Sloss-Sheffield Iron & Steel Company report for the quarter ended November 30 (November estimated):

	1902.	1901.	Changes. Increase.
Profit from operation.....	\$577,553	\$240,841	\$336,712
Depreciation and extraordinary repairs and renewal fund....	56,263	40,779	15,484
Net earnings.....	\$521,290	\$200,062	\$321,228
Three months' interest accrued.	52,500	50,644	1,856
Three months' taxes.....	7,500	6,825	675
Total charges.....	\$60,000	\$57,469	\$2,531
Surplus .....	\$461,290	\$142,593	\$318,697
Surplus brought forward.....	853,356	455,307	398,049
Total surplus.....	\$1,314,644	\$597,900	\$716,744
Preferred dividend.....	114,000	114,000	.....
Profit and loss surplus.....	\$1,200,644	\$483,900	\$716,744

The International Steam Pump Company propose a bond issue of \$3,500,000, for the purpose of acquiring new property, factories, lots, &c. A stockholders' meeting to vote on the proposition will be held December 22.

The Pressed Steel Car Company of Pittsburgh give notice of their intention to pay part of their outstanding mortgage gold notes, which are secured by a first mortgage made to the Morton Trust Company, trustees, dated February 18, 1901. The notes to be called are from 1001 to 1500, inclusive, being the series maturing February 1, 1904. These notes, with the coupons thereon maturing February 1, 1903, will be paid at the office of the Morton Trust Company on that date, and interest upon them will then cease.

**Dividends.**—The directors of the United Gas Improvement Company have declared the regular quarterly dividend of 2 per cent., payable January 15, to stockholders of record December 31.

The Crucible Steel Company of America have declared a regular quarterly dividend of 1½ per cent. on preferred stock, payable December 29. Books close December 18, reopen December 30.

The Sloss-Sheffield Iron & Steel Company have declared a regular quarterly dividend of 1½ per cent. on preferred stock.

The directors of the Westinghouse Air Brake Company of Pittsburgh have declared the regular quarterly dividend of 2½ per cent. and an extra dividend of 3½ per cent., the disbursement being the same as for other quarters of this year.

The Union Switch & Signal Company of Pittsburgh have declared a regular quarterly dividend of 2 per cent. on the preferred and 1 per cent. on the common stock, payable January 10.

**The Canal Dover Sheet Mill.**—The future of the Canal Dover works of the American Sheet Steel Company, destroyed by fire on Sunday, is to be determined within the next few days. The officials of the company have referred the matter of the losses and the probable cost of reconstruction of the plant to the engineering department, and will wait for a report from that department before making any decision. There has been no little talk of consolidating the Canal Dover plant with others in Ohio and arranging for a more economical operation of the system of mills there, but until details of the condition of affairs as left by the fire are carefully known this subject could not be discussed.

Sixteen of the 20 hot mills in the plant of the Sharon Tin Plate Company, at Sharon Pa., are in full operation. The employees of this plant refused to accept the cut of 3 per cent. in wages agreed to some time ago by the Amalgamated Association and the wages of the employees so far have suffered no reduction.

E. L. Ford and R. C. Steese of Youngstown, Ohio, have been granted a patent on an improved gas washer. This gas washer has been in use for some time at the furnace of the Brier Hill Iron & Coal Company at Youngstown and is said to have given very satisfactory results.

## The Purchase of the Union Steel Company.

### The Official Announcement.

Judge Elbert H. Gary has made the following announcement at Chicago of the details of the purchase of the plants and property of the Union Steel Company by the United States Steel Corporation:

"The Finance and Executive committees of the United States Steel Corporation, accompanied by the presidents and other prominent officers of the subsidiary companies of the Steel Corporation, have recently made an inspection of the Union and Sharon steel plants, now controlled by the Union Steel Company, and as a result the Finance Committee, by direct negotiation, has purchased the same for the Steel Corporation.

"These plants are located near Pittsburgh, on the Monongahela River, and at Sharon, respectively. They were started some time before the formation of the United States Steel Corporation, and not in opposition to it. These properties have wire, nail and other works in operation as going properties. When fully completed they will have five more blast furnaces and 25 open hearth furnaces, capacity to manufacture 7500 kegs of nails, new and modern tube mills, bar mills, tin mills, sheet mills, plate mills, &c.

They have about 5000 acres of coking coal in the Connellsville region, besides nominal railroads in the coke region, 6200 acres of fuel coal on the Monongahela River, limestone properties and valuable developed ore mines in the Mesaba region and Marquette region, containing about 40,000,000 tons of ore, two lake steamers and steel railroad cars.

"The Steel Corporation pay the exact cost of the manufacturing plants, to be determined by auditors appointed for that purpose. For the real estate, ore properties and the coal lands they will pay something more than the cost value, but not to exceed the present market value. The stockholders of the Union and Sharon plants agree to furnish about \$10,000,000 new cash, to be expended in the completion of improvements and further development of the properties in such manner as the Steel Corporation may determine.

"The manner of paying for the property will be by a bond issue of \$45,000,000, secured on the property and the principal and interest guaranteed by the Steel Corporation. For the actual money put into the manufacturing property the stockholders will receive these bonds at par. For the value of real estate, ore and coal they will receive bonds at par, and for the \$10,000,000 of new cash they will receive bonds at par. The remainder of the bonds will be kept in the treasury for use at some future time in such further development of the property as may be decided on by the Steel Corporation.

"The sellers' profit in the transaction arises solely from their profit in operating their plants to date, and in the increased value of their ore, coal and real estate, which were purchased some time ago.

"There is an advantage over purchase for the Steel Corporation, as the properties are located near their other plants, and the general expense of managing the business with the addition of these two large and modern plants will not be increased, and also for the reason that the corporation are now short of pig iron and open hearth capacity."

### The Ore Properties.

Our Duluth correspondent has in a recent issue of *The Iron Age* presented the following statement of the ore properties of the two companies: "The Sharon Steel Company own the stock of the Sharon Ore Company, operating a mine at Buhl, Mesaba range. This is the only property so far held by the company. It is owned in fee, having been secured for \$150,000 before the immense value of the property was understood. The mine is an open pit and the milling system is in vogue. Ore extends east and west ¼ mile and more than that north and south. There may perhaps be 40,000,000 tons in the deposit, which has hardly been fully explored as yet. It is largely non-Bessemer and would not have been regarded as high grade two years ago,

though now very satisfactory. In addition to their one large mine the Sharon Steel Company have long time contract with the Minnesota Iron Company, under which they will have a large annual tonnage of Mesaba Bessemer for some time to come.

"The Union Steel Company own the stock of the Donora Mining Company, who have a long time option for purchase or lease of the Volunteer mine at Palmer, Marquette range, and of several adjacent properties of promise. These are non-Bessemer and run from about 55 to 62 per cent. iron. The Volunteer, including 110,000 tons mined by the Donora Company this year, has shipped in all 1,260,000 tons. On the Mesaba range the company have recently bought the Penobscot mine, of promise. These are non-Bessemer and run from about 2,500,000 tons of stock pile a few miles west of the Penobscot and several million tons more on the east end of the range, largely Bessemer. They have also been doing a large exploring business and have operated six to ten drills for a year or more. They have found some ore in addition to the east end find, but not much has been taken for operation. The company are well fortified in ore supplies of good grade for a long time."

#### The Sharon Steel Company.

A very complete illustrated account of the plant of the Sharon Steel Company was published in *The Iron Age* of July 4, 1901, covering the works so far as they were then developed. The Sharon Steel Company were organized in October, 1899, by Frank H. Buhl, John Stevenson, Jr., and others, ground being broken on November 20, 1899. The plant comprised a blast furnace, 105 x 22 feet, equipped with four Kennedy-Cowper stoves. An elaborate system of ore unloading and charging machinery was put in place by the Brown Hoisting Machinery Company of Cleveland. The original plan included a basic open hearth steel plant of eight 50-ton furnaces, to which, however, subsequently four were added. These are now in operation. A 38-inch blooming mill, built by the Lloyd-Booth Company of Youngstown, was put down, and to it was coupled a Morgan continuous billet mill of six stands of rolls, three being 16 inches in diameter and three 13 inches in diameter. From these the rods are directly delivered to two Morgan continuous rod mills containing six stands of 10-inch roughing rolls and eight stands of finishing rolls. Parallel to the billet mill is a special tin plate bar mill. The plant includes a wire mill with 150 benches. A wire nail mill is equipped with 400 wire nail machines. The company have nearly completed a tube mill. This includes a 26-inch McIntosh Hemphill universal mill capable of rolling skelp 40 inches wide and a skelp mill. A constituent company of the Sharon Steel Company is the Sharon Tin Plate Company, with ten 26-inch hot mills and ten sheet mills. The product of this mill of terne and tin plate was sold to the American Tin Plate Company for a term of five years. The sheet mill is now practically completed, and the tube mill is also ready to start. An Otto Hoffmann by-product coke oven plant of 212 ovens is approaching completion, and will probably be ready to start in February or March.

#### The Donora Plant.

The Donora plant is located at Donora, Pa., on the Monongahela River. It consists of two rod mills, which have been in operation for some time past, of a large wire mill, admirably equipped, and a considerable number of nail and barb wire machines. There are under construction two modern blast furnaces, a plant of 12 open hearth furnaces of 50 tons capacity and a new mill for producing fine, bright and tinned market wires. Adjoining the mill property are an affiliated interest who have completed a plant for the manufacture of wire netting.

Both of the companies possess coal and limestone property. They own together about 4600 acres of coking coal in Fayette County and an aggregate of 6000 acres of steam and gas coal on the Monongahela River and in Mercer County, Pa. On the Donora property there are producing natural gas wells. At Sharon 212 by-product coke ovens are being built.

#### The Effect on the Trade.

This deal, involving as it does the transfer to the United States Steel Corporation of the plants of two of their most formidable competitors, was consummated in less than two weeks from the time negotiations started. Since the building of the plants of the Union Steel Company, at Donora, and the Sharon Steel Company, at Sharon, these two companies have been active competitors of the American Steel & Wire Company, controlled by the United States Steel Corporation, in rods, wire and wire nails and during the summer months the competition of the Sharon Steel Company was especially felt in the wire and wire nail trades. Both concerns have modern plants, and are able to turn out rods, nails and wire at low costs. In addition the Sharon Steel Company have been selling open hearth steel in the open market for some time in the shape of billets and sheet bars to competitors of the American Steel & Wire Company. The absorption of the two concerns by the United States Steel Corporation means the elimination of this competition as well as the prospective competition in rails, plates and structural material, as plans have been under way by the Union Steel Company for the building of mills at Donora to roll these products. It is hardly likely now that those mills will be built, but it is practically certain that the two blast furnaces and 12 50-ton open hearth steel furnaces being built by Union Steel Company at Donora will be finished as fast as possible as the product of the furnaces and steel works is badly needed by the constituent interests of the United States Steel Corporation. The contemplated railroad from Elk Harbor to Sharon and Donora, and the road from the Connellsville region to Donora will not be built. While his name does not appear in the transactions there is one man who more than any other person is responsible for the sale of the properties of the Union and Sharon steel companies to the United States Steel Corporation, and that man is Henry C. Frick of Pittsburgh. While Mr. Frick's name has never appeared as an official of the Union Steel Company, yet it is a fact that he was the controlling interest in that concern and was responsible more than any other man for its remarkable development in the past few years. Mr. Frick's ample means together with those of A. W. and R. B. Mellon of this city meant that any plans for enlargement no matter of what magnitude would be carried out. For this reason had this deal not been put though it is certain that the Union Steel Company within the next two years would have been an active competitor of the United States Steel Corporation in rails, plates and structural materials. The annual capacity of the Union Steel Company is 200,000 gross tons of wire rods, 200,000 tons of wire and 1,000,000 kegs of wire nails. Additions under way at this plant consist of two new blast furnaces, each to have a daily capacity of 500 tons, and 12 50-ton open hearth furnaces. It was the intention of the Union Steel Company to duplicate blast furnaces and steel works as soon as the first two stacks and 12 open hearth furnaces were finished. Whether these plans will be carried out by the United States Steel Corporation has not been fully decided.

The total annual capacity of the Sharon Steel Company is 300,000 tons of steel ingots, 125,000 gross tons of rods and 1,000,000 kegs of wire nails. The Sharon Steel Company also control the Sharon Tin Plate Company, with a weekly capacity of 18,000 boxes of tin plate and 2400 boxes of terne plate. The transferring of the properties of the Union Steel Company to the United States Steel Corporation will have a good general effect on the whole iron trade and is of particular benefit to the United States Steel Corporation and to the stockholders of the Union Steel Company, who have been paid a good price for their properties and in gilt edge security.

Forty new motor omnibuses have been built for use in London. They are fitted with a two-cylinder, 12 horse-power engine, provided with an absolute cut out governor, which cannot be interfered with, limiting the driving to a maximum speed of 14 miles per hour. The two-cylinder petrol engine will be a slow running type, with water cooling by a natural circulation.



# HARDWARE.

IN other columns we refer at some length, as befits the general interest of the occurrence, to the recognition by those actively identified with the house of which he is the head, of the position occupied by one of the captains of industry and a commanding figure among the manufacturers of Hardware. It is a matter of more than passing interest to reflect on the extraordinary changes which have taken place in the Hardware market in this country, and, indeed, throughout the world, since the days, more than half a century ago, when Joseph B. Sargent began in an unpretentious way the production of articles which have gradually been increased in number, as well as in the volume of output, until they now aggregate more than 30,000 items as the product of the single house of which he is the head. The countless problems connected with the upbuilding of such an enterprise, which now operates one of the greatest Hardware plants in existence; the contribution which has thus been made to individual welfare and national well being; the difficulties which at every step had to be met and mastered; the constant breaking away from old methods and traditions, and the gradual development through unnumbered experiments of better processes on novel lines; the bewildering increase in the variety of articles offered to the public, many of which were unknown and unimagined in the earlier and cruder days; the inexorable driving out of foreign goods and their replacement little by little with those of American make; the success which has attended efforts to find not only a home market for the products of the factory, but to make American Hardware known in all the markets of the world; the practical problems relating to an unceasing succession of details, as well as the broad questions of policy which were constantly presenting themselves; the combination of the qualities essential to the manufacturer with those that make the merchant; the requirement from first to last of persistence, foresight, invention, unswerving courage and balanced judgment—all these will suggest themselves to our readers in connection with the retrospect of a career which is measure in large part of the manufacturing development of the country. They will suggest also the work as well done perhaps, though not in many cases so rewarded, by other manufacturers less prominent, all of whom, however, have their share in building up the splendid industries which are giving this land a pre-eminent position among the nations and contributing in so important a degree to the prosperity and welfare of the people.

The report of the recent meeting of the Washington Hardware Association, which represents the merchants of that progressive State, illustrates the growing influence of the organizations of retail Hardware merchants, which more and more are making for themselves recognition as an important factor in the determining of trade questions and for the correction of trade abuses. The statement of the object of the association as it is given prominently on the official letter heads will command general commendation: "Organized to harmonize the Hardware interests of the State of Washington." It will commend itself inasmuch as it embodies an implied acknowledgment of the rights of other classes of trade and the desire of those identified with the association to establish harmonious relations. It assumes that the jobber and the manufacturer have their place in the market, and the object of the asso-

ciation is declared to be the establishment of a condition of things in which each of the three great classes shall be permitted to carry on business without unreasonable interference from the others. Its object is peace and not contention. This broad statement of its purpose is consistent with the official declaration that it is organized for the protection of the retail Hardware dealers. Much of the friction in trade in many parts of the country comes from the interference with the retailer's business through sales by jobbers, and sometimes by manufacturers, to his customers. The work of the associations is most influential in removing this disturbing factor, as the protest of the trade when backed by organization is generally effective. The establishment of harmonious relations throughout the trade is most desirable and the example set by the Washington Association in making this to be its object will be approved by other organizations, whether of manufacturers or of wholesale or retail merchants. The recognition of the rights of others is essential to the maintenance of the rights of any one class. There must be a fair minded looking at the complex problems which the changing conditions of business present and a careful avoidance of the adoption of any policy or measures which are not justified in view of all the interests involved. The discussion of trade questions and the candid statement of them as they present themselves to the various classes, so that there may be an understanding of all the facts and interests in the case, is a prerequisite to an intelligent solution of the problems which demand attention.

## Condition of Trade.

The general features of trade remain substantially as at our last review, except as they are affected by the approach of the holidays and the end of the year. Hardware merchants are naturally giving attention to the winter lines which are in active demand, and to preparations for the holiday trade, which will soon be upon them in full volume. The annual inventory, too, begins to come into sight, and things are being gotten into readiness for it. Meanwhile current demands for miscellaneous goods are active, and a good many orders are being sent out for the replenishing of stocks. Travelers are gradually withdrawing from the road, and manufacturers and jobbers are, for the most part, simply taking care of such business as comes along of its own accord. The large trade are not, as a rule, purchasing at this time. Many, however, have orders already placed for next season's requirements, but the conservative spirit which prevails does not lead them to purchase goods much in advance of their needs. Prices, as a general thing, are steady with a tendency toward revision in the direction of slightly lower values in cases where prices have been high, due to artificial control or other exceptional causes. Meanwhile the consumption of goods throughout the country keeps up, reflecting the activity which prevails in all quarters and the well being of the people.

### Chicago.

(By Telegraph.)

Manufacturers' agents report a very satisfactory business in Builders' Hardware for delivery in the spring months of 1903, a number of large individual orders having been booked during the week. Manufacturers of such goods not closely identified with the association have shown a disposition to adjust prices to harmonize more closely with association figures, which is especially true of Knobs. Some further satisfactory orders have been gathered during the week by agents for man-

ufacturers of Refrigerators. It is now claimed that the largest manufacturers of such goods have disposed of nine-tenths of their probable output for 1903. Quite a number of new contracts have also been taken by manufacturers of Lawn Mowers. Saw manufacturers find themselves with contracts which will keep their entire capacity busy for many months. The jobbing trade has been quite active not only in holiday goods, which have met with an increased demand, but on regular lines of standard goods, business running considerably ahead of the corresponding time a year ago. Some of the jobbers are taking inventories, and as near as can be determined at this moment statements reflect a substantial increase in the volume of business transacted compared with that of 1901. The volume of business in Nails and Wire has continued quite heavy, and the largest interest has notified buyers that all orders received after December 20 for shipment will not be protected from the advance in freight rates. The result of the various conditions tending toward the placing of early orders has resulted in an unusually large volume of business, which has been shared in to some extent by the independent mills. In other lines of Heavy Hardware the merchant trade has been only moderate as usual at this season. One point of interest is the report that negotiations for the merger of another independent mill into a company recently formed are in progress, and it is expected that the settlement will be made within a few days.

#### St. Louis.

(By Telegraph.)

Conditions of trade from the Hardware jobbers' standpoint are of a very satisfactory order, and the large volume of general demand shows but slight cessation. It is said that the volume of spring trade handled thus far has been very large and beyond records of recent seasons. The advance of 5 per cent. in Steel Goods announced has not yet been officially acted upon by the jobbers. Shovels have been a prominent item in the jobbers' lists this fall, and a very large volume of trade has been executed. Large requirements for Poultry Netting have been placed, and Screen Cloth also figures for liberal demand. The very open season that we have had thus far and the abundance of ready funds apparent among the buyers in this territory are the principal incentives for the free buying movement.

#### Louisville.

W. B. BELKNAP & Co.—The market for this time of year is remarkably steady. There seems to be no desire to cut prices. In fact, if indications may be taken as worth anything, the mills are all well employed ahead for some time, and do not feel the need of putting forth extra inducements to get business.

The fine open weather of the fall and early winter has permitted outdoor work to go forward uninteruptedly. Now we are having abundant rain, which will keep the water courses open and serve to relieve, in good measure, the congestion of the railroads. There is more interest in boat building and navigation than for many years. We look to see a great benefit that the river trading gets from this revival.

Christmas shopping is freely indulged in and accordingly the retailers are well satisfied. More and more of Christmas goods are being carried by the distinctive Hardware trade, so that instead of this being a dull season of the year it is becoming one of the most active.

#### San Francisco.

PACIFIC HARDWARE & STEEL COMPANY.—The last month of the year has kept pace with the rest of the year, and trade conditions are in very good shape. The farming interests were never better than at the present time, as the rains have been more satisfactory than last year.

The principal item of interest has been the arrival of the cable steamship "Silvertown" with the cable aboard to connect San Francisco with Honolulu. The shore end of the cable has already been laid at this port, and next week connections will be made, and the

steamer will start on her voyage of laying the cable to the Sandwich Islands. This will be a great event for the Western Coast, and the merchants of San Francisco have tendered a reception to the Commercial Cable Company to be held Thursday in the Maple Room of the Palace Hotel. It is expected that the cable will be in working order by January 1, 1903.

#### Boston.

BIGELOW & DOWSE COMPANY.—We have two feet of snow in and about this city and unknown depths in the surrounding country. The heavy fall of snow has cleared the market of Sleds and Snow Shovels. The extremely cold weather and scarcity of coal has made a ready sale for all the Oil Heaters and Air Tight Stoves to be had; so the price goes soaring to double and more than the prices of the early season.

The coal famine is more intense than ever before. Soft coal is being used in place of hard, and the clear air of our Northern cities is filled with the dark and dirty smoke of bituminous coal, which disfigures everything it reaches. Never more can we look with pride upon the cleanliness of our city and its buildings, for they are covered with a dirty smoke which it would be hopeless to believe will ever be removed. And why is all this suffering and destruction? Simply to gratify the whims of a foolish strike of the coal miners and the perversity of the mine owners. If they could have their fight and quarrel all by themselves the community would not mourn if they killed each other, but unfortunately the whole people must suffer for their cussedness. The temper hereabouts favors free coal and, incidentally, free iron. Neither the strikers nor the operators of coal mines would have any further protection if dependent on a vote of New England.

Notwithstanding the perversity of the weather and the unexpected happenings trade flourishes and the volume of business is well maintained. Orders for spring goods are being booked freely and the outlook for spring trade is good.

Trouble in the financial world and in the stock market is often the forerunner of trouble in values of merchandise, and it seems a good time to practice caution and be conservative.

#### Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The Hardware market here presents few new features since our last report. Trade is now keeping up remarkably well for the season of the year. The beautiful Indian summer weather that we are having in December, while it has been very favorable for all outdoor work for farmers, railroad builders, house builders, mining enterprises, &c., has not had the effect of bringing the second orders for some seasonable goods, such as Coal Hods, Heaters, Stove Pipe, Stove Boards, lap robes, leggins, &c.

The demand for holiday goods, which is quite a feature of the business at this season, seems to be up to the standard, yet our "country cousins" are sending in orders for a general assortment of goods as though they did not know that Santa Claus was due to arrive in a few days. Collections are good. The situation may be characterized as quite satisfactory.

The Iron Age report of the National Hardware Association was highly satisfactory and was eagerly read by some of us who were too busy to attend.

#### Cleveland.

THE W. BINGHAM COMPANY.—Business in this section is very good, especially in holiday goods. Merchants who bought Skates early are now sorting up and there is a good lively demand also for Sleds, Sleigh Bells and Snow Shovels.

Time for taking inventory is near at hand, but it does not seem to make much difference with the orders that are coming in from our customers, as the business they are sending us is for well assorted orders for all kinds of Hardware, Mining, Milling and manufacturing supplies.

Collections are good and our customers seem to have plenty of money to pay promptly and take the 10-day cash discount.



**Omaha.**

**LEE-GLASS-ANDRESEN HARDWARE COMPANY.**—We have no variation to chronicle relative to volume and condition of business since December 1. Conditions have remained unchanged for some time past, so that it seems superfluous to repeat the fact that trade continues to be all that could reasonably be expected. All kinds of goods that are seasonable are moving very freely and both jobbers and manufacturers have about all they can attend to, otherwise the market is featureless. The outlook for the future appears to be promising on the whole, and as long as the financial situation at the East remains in a healthy condition no apprehensions will be apparent in this section of the country.

**NOTES ON PRICES.**

**Wire Nails.**—Market conditions continue favorable, both regarding demand and firmness. The tendency, in view of the sustained values in raw material, appears to be toward at least the maintenance of present prices. This view of the market's future is strengthened by the fact that manufacturers are, in some cases at least, refusing to accept orders for delivery after January 1. Quotations are as follows:

Jobbers, carload lots.....\$1.85  
Retailers, carload lots..... 1.90  
Retailers, less than carloads..... 2.00

**New York.**—The unfavorable weather during the week has caused a suspension of building operations, and has materially affected the demand for small lots of Wire Nails from store. Quotations are as follows: Single carloads, \$2.05; small lots from store, \$2.10.

**Chicago, by Telegraph.**—The manufacturing trade has received a large volume of orders during the week, jobbers having the incentive of providing for spring stocks before freight rates advance. As a rule more or less difficulty is experienced in obtaining orders in the quantity and in the sizes wanted early in the spring. New York jobbers are therefore anticipating wants, especially as they can secure the goods now at lower prices than after the turn of the year. So heavy has been the volume of contracts offering that the difficulty now is to make shipments during the remainder of the month. The largest interest have therefore notified customers that they will not be responsible for goods the orders for which are received after December 20. To a considerable extent independent mills are sharing in the increased volume of business. The jobbing trade has been only moderate, but prices have remained firm. Official prices have continued firm at \$2 in carload lots and \$2.10 in less than carload lots, mill shipment, Chicago.

**St. Louis, by Telegraph.**—Conditions continue about the same with the jobbing trade, and a very fair amount of business is being executed. In small lots from stock \$2.25 is the quotation.

**Pittsburgh.**—Demand for Wire Nails has considerably improved in the past month and manufacturers confidently anticipate a very satisfactory spring trade. Jobbers are placing orders somewhat earlier than usual in the belief that there may be more or less delay in getting shipments of Wire Nails owing to the congested condition of the railroads, and which is not likely to improve until spring. Pleasing features of the situation are that specifications on old contracts are coming in more freely than for some time, while prices are being firmly held, there being almost an entire absence of any cutting. We quote Wire Nails at \$1.85 in carloads to jobbers, \$1.90 in carloads to retailers and \$2 in small lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days. For galvanizing Nails 75 cents per keg is charged, and for tinning Nails \$1.50 per keg extra.

**Cut Nails.**—The volume of business is fair, but delay in getting prompt deliveries, caused by inadequate shipping facilities and scarcity in steel, is still experienced. Cut Iron Nails are particularly scarce. Quotations are as follows: \$2.05, base, in carloads, and \$2.10 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube

Rate Book to point of destination; terms 60 days, less 2 per cent. off in 10 days.

**New York.**—Owing to inclement weather during the week, the demand has fallen off in the local market for Cut Nails. The market is firm at the following quotations for carloads and less than carloads:

Carloads on dock.....\$2.18  
Less than carloads on dock..... 2.23  
Small lots from store..... 2.30

**Chicago, by Telegraph.**—The market has been without special animation, orders being mainly for small lots. With stocks light and difficulty in getting prompt shipments from mills the market has remained firm, with sales on the basis of \$2.15 in carload lots and \$2.20 to \$2.25 in less than carload lots for Steel, Chicago. Iron Nails are sold on the basis of \$2.30 in jobbing lots from store, Chicago.

**St. Louis, by Telegraph.**—Generally firm and steady conditions are apparent in the market for Cut Nails, and the volume of demand is on a fair basis. Jobbers quote \$2.35 from store in small lots.

**Pittsburgh.**—We note a demand for Cut Nails and the tone of the market is strong. We note the fact that there is still some delay in getting prompt shipments, owing to lack of motive power and congested condition of the railroads. Iron Cut Nails continue scarce and bring 15 cents advance over Steel in territory west of Buffalo. The tone of the market is firm and we quote Steel Cut Nails as follows: \$2.05, base, in carloads, and \$2.10 in less than carloads, plus freight in Tube Rate Book to point of destination, terms 60 days, less 2 per cent. off in 10 days.

**Barb Wire.**—The recent activity in the demand for Barb Wire in the Western section of the country may be attributed largely to the desire of securing deliveries before January 1, when freight rates are to be advanced. In other sections demand has been but moderate. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$2.15	\$2.45
Retailers, carload lots.....	2.20	2.50
Retailers, less than carload lots.....	2.30	2.60

**Chicago, by Telegraph.**—The same conditions reported as to Wire Nails have affected Barb Wire, the difficulty now being, as far as manufacturers are concerned, to make shipments in December of orders booked. Trade has been heavy, jobbers preparing for spring while it is possible to secure stock before an advance in freight rates on January 1. A firm tone has continued to prevail. Official quotations for Galvanized are \$2.60 for carload lots and \$2.70 in less than carload lots; Painted sells at \$2.30 in carload lots and \$2.40 in less than carload lots, Chicago. There is a fair demand for Staples, and the market remains steady at \$2.05 in carload lots and \$2.15 in less than carload lots.

**St. Louis, by Telegraph.**—The demand and the inquiry for Barb Wire at this time is moderate. Signs of improvement are apparent, and trade in larger volume is looked for a little later on. For small lots from store jobbers quote Painted at \$2.50 and Galvanized at \$2.80.

**Pittsburgh.**—A fair amount of tonnage is being placed in Wire and it is believed spring trade will be of the usual large volume. Demand from Western sections is fairly large, but from the East is small. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days: Painted, \$2.15; Galvanized, \$2.45, in carload lots to jobbers; Painted, \$2.20; Galvanized, \$2.50, in carloads to retailers; Painted, \$2.30; Galvanized, \$2.60, in small lots to retailers.

**Plain Wire.**—In the West a large volume of business has been placed for December shipment, to secure the advantage of freight rates before the advance is made in this direction. Demand further East is light. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....\$1.75  
Retailers, carloads..... 1.80  
Less than carloads..... 1.90

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9	10	11	12	12½	13	14	15	16	17	18
Base	\$0.05	.10	.15	.25	.35	.45	.55	.70	.85	Plain.
	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	1.70	1.85 Galv.

**Chicago, by Telegraph.**—Both the heaviest manufacturing interest and independent mills have shared in a liberal volume of business during the week. The same conditions have been affecting Plain Wire as have been noted under Barb Wire and Wire Nails. The jobbing trade, however, has continued quiet, and a firm tone has prevailed. Nos. 6 to 9 in carload lots are quoted at \$1.90 on track and \$2 from store, Galvanized selling at 30 cents extra for Nos. 4 to 14 spot.

**St. Louis, by Telegraph.**—Plain Wire is moving in moderate volume, and jobbers quote in small lots from store No. 9 at \$2.05, and Galvanized at \$2.35.

**Pittsburgh.**—Some improvement in demand is noted and specifications on contracts are coming in better than for some time. The tone of the market is firm, there being very little, if any, cutting in prices. We quote Plain Wire, \$1.75, base, for Nos. 6 to 9 in carloads to jobbers, \$1.80 in carloads to retailers and \$1.90 in small lots to retailers; Galvanized, 30 cents extra for Nos. 6 to 14 and 60 cents extra for Nos. 15 and 16.

**Cordage.**—The demand for Rope is moderate, and as a result the market has developed some weakness in the way of a larger range of prices, Manila Rope is quoted, on the basis of 7-16 inch and larger at 10¼ to 11½ cents per pound. Sisal Rope, on the same basis, is quoted at 7¼ to 9½ cents. These quotations represent quality and quantity.

**Glass.**—The problem which has confronted the combined Glass factories for some time has been, how to induce the National Window Glass Jobbers' Association to take the allotment of Glass from the manufacturers of 450,000 boxes per month, or more than 2,500,000 boxes for the first six months of 1903. The manufacturers argue a demand for all the Glass that will be made this year, and give utterance to veiled threats of disposing of their entire product to some one concern, or of going into the open market and selling to all buyers. The Jobbers' Association as a whole do not see why they should load themselves with such a large quantity of Glass when demand has been light, especially at an increase in price on each month's delivery. Repeated meetings have been held between the manufacturers and jobbers since the early part of October. The last meeting was held on Monday and Tuesday of this week at Pittsburgh. While particulars are not obtainable at the time of going to press, it is understood that a deal of some kind has been made by which the Jobbers' Association will buy Glass of the combined factories, and that a new price-list will be issued, from which association jobbers will sell Glass.

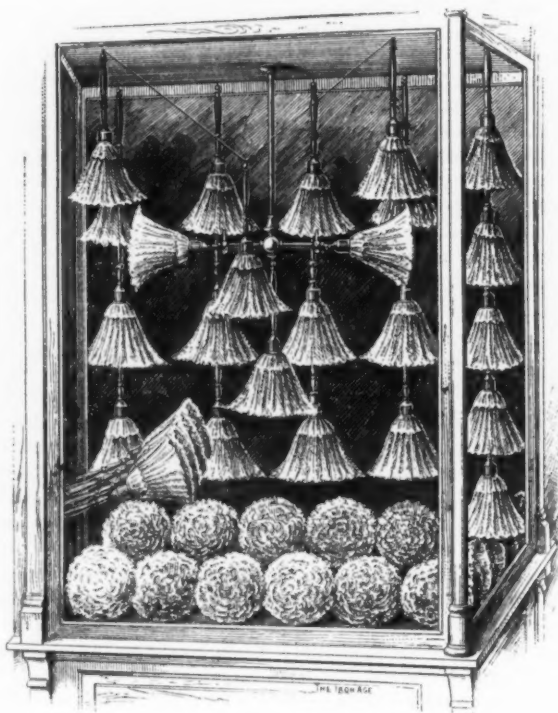
**Oils.—Linsed Oil.**—The market situation continues about the same as for the past few weeks. Demand for small lots is considered good for the season, but no futures are offered by the crushers, nor are inquiries being received from buyers at present prices. It is stated upon what is considered reliable authority that the crushers have supplied themselves with enough Seed to run their mills until spring, and that there is a large amount of seed stored in Western elevators, with still a large amount to be put on the market by farmers. It is estimated that there is a large surplus of Seed which will have to be carried over into the 1903 crop. In the face of these facts Seed has been bid up to \$1.24 per bushel at Chicago. Daily receipts are being taken at market prices, while trading in May options has been quite active. There is a question whether this market will hold for any length of time. The position assumed by the crushers in not offering futures is considered unusual by some members of the trade. It is assumed by them that there would be a good profit in selling carload lots of Oil for future delivery at somewhat less than ruling prices, considering that the bulk of the Seed was purchased at figures below present values. Taking it

all in all, present conditions, with the uncertainty accompanying them, have not ruled in the Oil market for many years, if ever. The market is firm at the following quotations: City Raw, according to quantity, from 46 to 47 cents per gallon; State and Western brands, 45 cents per gallon.

**Spirits Turpentine.**—Owing to large export demand at this point, as well as at Savannah, stocks have been greatly reduced and prices have advanced. Local quotations, according to quantity, are as follows: Southern, 54½ to 55 cents; machine made barrels, 55 to 55½ cents per gallon. The market has an advancing tendency.

## A FEATHER DUSTER WINDOW.

**J. S. DAVENPORT & SON**, Stamford, Conn., occasionally fill the show window with Feather Dusters somewhat as is shown in the accompanying illustration. This makes an attractive and a somewhat unusual display and, according to their reports, one that



A Feather Duster Window.

always makes many sales of these goods. They state that people have a great way of using a worn out Feather Duster long after it should have been thrown away unless their attention is attracted by a new article.

## REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

Buffalo Wholesale Hardware Company, temporary office in Chapin Block, Buffalo, N. Y., to whose organization we referred in a recent issue, will be pleased to receive catalogues and other printed matter from manufacturers of Hardware and kindred lines.

C. W. Copp is about to open a retail Hardware store at Flushing, N. Y., and intends carrying a complete stock of Builders' Hardware, Stable Fixtures, Paints, Oils, Mechanics' Tools, &c. Mr. Copp would value catalogues and quotations relating to these lines.

E. M. Abrahamson has purchased Ira Chandler's store at Lillylake, Ill., and will continue the Shelf and Heavy Hardware, Stove, Tinware and Sporting Goods business.



## Correspondence.

### Removable Leaf Catalogue.

BOSTON, December 12, 1902.

To the Editor: Since your notice of our catalogue in *The Iron Age* we are having many favorable comments on its loose leaf feature and requests for copies from all parts of the United States and Dominion of Canada, as well as from Japan, Turkey, South Africa, and the different countries of Europe, showing the world wide influence of your paper, as well as an evident interest in the trade on the catalogue question.

In the present ways of doing business a catalogue is almost a necessity for the smaller as well as for the larger houses. The increased variety of goods handled by the Hardware dealer makes it impossible for a salesman to do justice to himself and to his house without one. An improvised catalogue made up by using various manufacturers' catalogues is not satisfactory and does not produce the results that are obtained from one issued by the house itself.

At the present time there are few dealers who do not appreciate the necessity of having a catalogue of their own, but hesitate to undertake the long and tedious work of compiling and the expense of issuing one.

It has always seemed to the writer that most Hardware catalogues are duplicates of each other as to cuts and staple goods, and that a large proportion of the pages might be used by another house (if they were electrotyped) by only changing the name and page in a new plate copied from the original. We had this in view in having our pages set up with new type and printing from electrotypes. The patterns of Locks of different manufacturers are illustrated by a similar cut and description: this would involve only a change in the number on the plate, which is easily done. This also applies to Hardware made by Sargent & Co. and other manufacturers and to very many general Hardware goods. To complete a Hardware catalogue is an arduous and tedious task, involving an average labor of two years, so that if one can utilize work already done so much expense and time is saved. The average cost of a catalogue is from \$12,000 to \$25,000 for an edition of from 2000 to 3000. The following is our estimate of the cost of an edition of 2000 books of 1000 pages printed from electro plates already made (same size as our catalogue):

1,000 electro plate pages, \$3.....	\$3,000.00
126 reams, 13,860 pounds, book paper, \$0.05.....	693.00
6 reams, 612 pounds, ledger paper, for index, \$0.18.....	110.16
Printing from electros.....	900.00

Total .....	\$4,703.16
Binding 2,000, cowhide back and corners, with cloth sides, \$0.80.....	1,600.00

Loose leaf binders, canvas covers, 2,000, \$1.30..... 2,600.00  
Changes in electro plates would cost at the rate of 60 cents per hour and new pages about \$6 for composition and electrotyping.

We make these suggestions as the cheapest, easiest and most expeditious way to produce a catalogue.

BIGELOW & DOWSE COMPANY.

### Retail Representation at the Jobbers' Conventions.

From a gentleman prominently connected with the work of retail organization, who takes a broad view of trade questions, we have the following expressions called out by the suggestion in a recent issue that the retail Hardware organizations might advantageously be represented at the meetings of the jobbers and manufacturers:

I was much pleased to read your editorial suggesting the propriety of having representatives from the retail associations meet the jobbers at their annual conventions. This, it seems to me, would be advantageous in many ways.

I am convinced that there is a misapprehension on the part of the jobbers of the position that the retail

trade has taken in organizing State associations and national associations. As near as I can get to it, there is an indefinite fear on their part that we are organizing for the purpose of getting into shape to make unreasonable demands upon them and seek to carry our points by threats of bulldozing. To disabuse their minds of such a notion is one of the reasons for a conference. I have no sympathy with bulldozing methods. I certainly will never consent to go to the jobbers either in a belligerent way or in a suppliant's position. We are just as necessary to them as they are to us and we should meet as equals or not at all.

I am satisfied that the jobbers would feel differently could we get a hearing before them in their convention. We do not want to join their convention or association, but there are some things that we should confer about that are of vital interest to both of us, jobbers and retailers.

That there should be a recognition of the rights of manufacturer, jobber and retailer in relation to each other is more than manifest. The manufacturer has no right to sell to the retailer at the price the jobber gets. The jobber has no right to sell to the consumer at the price he asks of the retailer. The retailer has a right to buy of the manufacturer if he wishes, but not at the price that is given to the jobber. The consumer has a right to buy of the jobber if he wishes, but not at the prices given the retailer. If the manufacturer will protect the retailer there will not be much buying by the consumer away from home. This recognition will only come by education and personal contact between manufacturers, jobbers and retailers through their representatives in conventions. That is what conventions are for. I am therefore very glad that you have opened up the subject and I hope that something will come from the discussion that you have started.

### American Hardware Manufacturers' Association.

To the Editor: I notice the article in your issue of December 4, from "Wires," on the subject of the American Hardware Manufacturers' Association, and regret that he has taken occasion to make public his views, passing criticism on the association.

It seems to me hardly fair to expect perfection in an organization that has existed only one year, and that has had only two regular meetings. In every new organization—even when made up of men familiar with the business in which they are about to embark, it takes one or more years to get under speed and correct mistakes, or do things which they have neglected to do; and so with the American Hardware Manufacturers' Association, it has something to learn, and can only learn by meetings of its members and coming in contact with the trade.

Touching on some points that "Wires" has made, I fail to notice that the manufacturers have attended the meetings for the purpose of looking after trade, but rather for the benefiting of themselves and improving their relations with the trade in a business way, although incidentally the social feature naturally comes before them.

And is it not well for us, whose noses have been held to the grindstone for years, that we should indulge a little in social receptions, or a modest banquet?

While it is clear that there are some reasons why the manufacturers should meet by themselves, and not at a time when the jobbers are in session, yet by many it is thought best to have the conventions at the same time that the jobbers have theirs, that we may jointly discuss certain questions to our mutual advantage and profit. Each organization has its executive sessions when no one but members are permitted to be present, and it is to the mutual convenience of members of both organizations that they convene at the same time and in the same hotel.

As for binding members of the American Hardware Manufacturers' Association to certain policies or certain agreements, it is a grave question whether it is wisdom to do so. An association of manufacturers in

any one line might readily and do often agree; but the American Hardware Manufacturers' Association is made up of members of greatly diversified industries. An eligible manufacturer is one who makes goods which he sells to the Hardware trade. One may make Refrigerators; another, Ice Cream Freezers; another, Locks; another, Saws; another, Nails, and another, iron and steel, each industry foreign in every detail and in every sense to the others, except they all buy materials and combine them to make a product to sell to the same class of trade. They can only discuss generalities, policies and such questions as interest them all—and interest the jobber as well as the manufacturer.

The American Hardware Manufacturers' Association has accomplished a good deal for its membership; it is of advantage to the wholesale Hardware trade, and its membership should be increased, and the conventions should be more largely attended, and by active and enthusiastic workers.

SHERWOOD.

*To the Editor:* As a jobber, I desire to commend most heartily the article in the last issue of *The Iron Age* over the signature of "Veritas," on the late meeting in New Orleans of the Hardware manufacturers and jobbers. As one who was present and who took a deep interest in the proceedings of both bodies, I wish, as a jobber, to indorse all that "Veritas," as a manufacturer, says in commendation of the work of both conventions.

To one not in attendance, the published reports in the daily papers might seem to justify the inference that some of the incidental entertainments could be profitably dispensed with, but the very large body of manufacturers and jobbers who were there to transact important business know that the time was carefully used, and that the sessions were productive of substantial results. I cannot speak, of course, of the executive sessions of the manufacturers, but this is emphatically true of the joint sessions of the two bodies and of the jobbers' executive sessions, and I have no doubt it is also true of the executive sessions of the manufacturers. I do not believe there was a single member of the National Hardware Association present who did not feel that he was richly repaid for his trip to New Orleans, and if there was a manufacturer that did not share in this feeling it is clear to my mind that it was his fault. There were certainly abundant opportunities for him to have reached profitable results. The trouble with some members of both bodies, in my judgment, is that, like "Wires" in this case, they do not attend the conventions, and they really do not know what has been done, at least until the full reports have been sent out by the secretaries, and even then they lose much of the benefit of the meetings. If "Wires" will attend the future meetings of the American Hardware Manufacturers' Association I am sure, from the sincere desire that he shows for the betterment of the conditions that vitally affect the business, he will find that he has been abundantly compensated for the time and money expended. The next meetings will be at Atlantic City, and there will probably be less than usual to disturb the work of the conventions, and it is to be hoped that "Wires" and all other absentees at the last meeting will be present.

"Veritas" is also wholly right in his view that the two conventions should meet at the same time and place. The New Orleans meeting was the first one of the manufacturers, and, with the experience of that meeting, both jobbers and manufacturers can arrange for still better working plans and results than could be expected on the first occasion.

The National Hardware Association desires to see all manufacturers of Hardware members of the American Hardware Manufacturers' Association, and believes that through it the best interests of both manufacturers and jobbers will be secured.

JOBBER.

The True Hardware Company have succeeded M. L. Stalker in the Hardware business at St. Mary's, Kan. The company have combined this stock with their own and removed to a larger building, where they have also added several new lines.

## A PAGE FROM CIRCULAR OF FALL AND WINTER GOODS.

BYRON E. WALTER, 900 Milwaukee avenue, South Milwaukee, Wis., issued a four-page circular on straw colored paper, 5½ x 14 inches in size, devoted to fall and winter goods, the accompanying cut of one of its pages being half the size. The goods illustrated on the other pages include a Razor, Pocket Knife, Roasting



Which would you rather do, use a chopping bowl and knife or a good Food Chopper? The latter of course; it's so easy to work and keep clean. Three cutters with each machine, to cut anything coarse medium or fine.

Our stock of Tinware and Graniteware is always complete. High grade goods at the lowest prices, compared with quality.

A set of these Sad Irons is always handy. Nicely nickel plated, with strong varnished handles, sold in sets of three sizes, with stand.



Did you know before that we sell lamps? Yes, and at prices way down, anything from a small hand lamp to one for your parlor. If you want a chimney or a wick, remember us the next time you are in need of one, any style, any size.

That Heater you spoke about is still at the store.



Do you recall the many times you could have used one of these handy Scales? Made entirely of steel, with a plain dial, weighing up to 24 pounds. Better get one now, so you will have it when you want to use one again.

For those chilly days use an "Erie" Oil Heater.

When you buy a Lantern you naturally want a good one. When you buy it here, it is a good one and one that won't blow out. Made of heavy tin, large oil reservoir No. 1 brass burner and side lift, complete with globe and wick.



You can get your Stove-pipe, Coal Hod, Fire Shovel, Stove Board, Oil Rug, Elbows, Ash Scives, Cover Lifters, Pokers, Etc. at Walter's Hardware Store.



A Wash Boiler is used the hardest of any article around the house. It must be made strong, to withstand the wear and tear. Nothing but good materials go into the boilers we sell; anything from an all tin with copper bottom, to one made of all copper.

A Page from Circular of Fall and Winter Goods.

Pans, Clothes Wringer and a Cook Stove. The circulars were mailed to customers and to people desired as customers, in order to strike closer home and to place the circular above the ordinary handbill, which Mr. Walter has found to be ineffective in increasing trade. This is a case, he remarks, where the goods are judged by the advertising medium. The names of the parties to whom the circulars were sent were obtained from the publisher of a weekly paper and proved to be a good list. The circular proved a trade winner. The absence of prices is noticeable, as well as the way of saying ordinary things in an attractive and interesting manner.

## CARDS IN THE WINDOW.

IN the following letter our correspondent refers to the utility of catchy cards in the show window or store: The display of goods either in the window or in the store may often be made more effective if a neat card with the name of the article tastefully marked upon it is attached. While customers are familiar with the names of goods in general use, seeing a card they naturally read it, thus calling their attention to the goods and possibly reminding them that they can use just that thing; or the fact is impressed upon their minds where it can be bought when they require it.

It may be advisable to mark the price and some catchy wording on the card with the name of the goods, though the price may be no lower than they can be purchased for elsewhere. A Rat Trap containing rodents, accompanied by a card reading "\$1.00 each; not



the rats, but the Trap," will attract attention and remind beholders that the annoying rats at home need exterminating.

### AMONG THE HARDWARE TRADE.

J. B. Barnes has succeeded C. C. Hamilton in the Hardware and Builders' Supply business in Mannington, W. Va.

O. P. Cozatt has sold his Hardware store and business in Mound Valley, Kan., to E. B. West, who will continue under his own name. The building is a new one, having been completed within a year. It is two stories high and 50 x 80 feet in dimensions. Mr. Cozatt has removed to Kansas City.

The Hardware firm of Teller & Goodnoe, Schenectady, N. Y., has been dissolved, C. N. Goodnoe disposing of his interest to Welton Stanford. The business will continue at the old stand under the style of Teller & Stanford.

On January 1 Gragard Bros. will succeed H. L. Hodges & Co. in the Hardware business in Jacksonville, Texas.

J. F. Donahue & Co., Sandusky, Ohio, will be succeeded by the Donahue Hardware Company on January 1. The new concern have been incorporated with a capital stock of \$50,000, and the following officers: J. F. Donahue, president and general manager; C. Faber Donahue, vice-president; Adam J. Smith, secretary, and F. W. Smith, treasurer. This business was established in 1840. The new company will conduct both a wholesale and retail business, handling an extensive line, embracing Builders' Hardware, Building Papers, Plows, Ship Chandlery, Oils, Paints, Mantels, Heavy Hardware, Roofing, &c.

The business at Porterville, Cal., which A. J. DeLaney has conducted for the past seven years, has been incorporated under the style of the A. J. DeLaney Company, with a capital stock of \$20,000. The company will handle Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, &c.

The fire which destroyed the Masonic Temple in Laconia, N. H., on the 6th inst., also consumed the entire stock in trade and fixtures of the Laconia Hardware Company. Absolutely nothing was saved from the conflagration in the store, with the exception of the book accounts. The company are planning to resume business as soon as they can secure and fit up new quarters and procure a stock of new goods.

After a business experience of 35 years in the Hardware line, A. M. Dake, the surviving partner of the firm of J. M. Dake & Son, Nunda, N. Y., has disposed of his stock to Mervin J. Aylor, farmer and capitalist, and W. S. Smith, formerly proprietor of a variety store in Nunda. The new firm style is Smith & Co., Mr. Smith managing the business.

David Yung has purchased the stock of Hardware, Agricultural Implements, &c., of Fred. Holst, Cedar Bluffs, Neb.

Carl Lund & Co., Hardware dealers at Dawson, Minn., have been succeeded by Lund & Ammundson. The new proprietors have remodeled the store.

E. Larson, Sioux Falls, S. D., has been succeeded by Larson Hardware Company, who will continue the wholesale and retail business in Heavy and Shelf Hardware, Stoves, Tinware, &c.

W. H. Proctor of the Hardware firm of Mellen & Proctor, Brattleboro, Vt., has disposed of his interest in the concern to J. Edgar Mellen, who will continue

the wholesale and retail Hardware business at the old stand. Mr. Mellen was the senior member of the firm and has had an experience of more than 25 years in the business.

C. F. Merriman & Co. have succeeded to the McIntyre Hardware business in Conway, N. D. The new firm will erect a two-story brick store, 46 x 80 feet, for the accommodation of the Hardware, Harness and Furniture business.

J. W. Wait, Antwerp, N. Y., has bought the Hilton store on Depot street and will open therein a Hardware store and Tin shop, his present quarters being inadequate.

The Ross Supply Company, incorporated under the laws of Ohio, have succeeded the Ross Supply House, Greenville, Ohio, and will continue in the wholesale business in Gas, Steam and Water Fittings, Wind Engines, Pumps, &c. The officers of the new company are as follows: F. T. Conkling, president; J. P. Duffy, vice-president; R. P. Vernier, treasurer, and J. H. A. Ross, secretary and general manager.

C. C. Grimmitt has purchased the Hardware, Agricultural Implement, Buggy and Wagon and Sporting Goods business of J. E. Gibbs & Co. in Bowling Green, Mo.

H. J. Billerbeck, Osmond, Neb., has added furniture to his former Hardware, Stove, Agricultural Implement and Sporting Goods stock. Mr. Billerbeck has lately completed a two-story addition, 50 x 90 feet, and now occupies main floor of 50 x 150 feet, with second floor 50 x 90 feet.

Geo. H. McNeir has succeeded Otto Goetsch in the Hardware and Tinware business in Renova, Minn.

Dawson Hardware Company, comprising J. C. and E. W. Hollingsworth, have succeeded A. J. Baldwin & Co., at Dawson, Ga.

F. M. Thompson, dealer in Hardware, Edgar, Neb., has sold out to Ong & Edgar.

### CALENDARS.

HARRINGTON & RICHARDSON ARMS COMPANY, Worcester, Mass.: Their calendar for 1903 is a handsome lithographic production in 12 colors. The company state they will be pleased to send the calendar free to those who desire a copy if they will mention *The Iron Age*, and inclose 6 cents in stamps to cover postage.

THE PETERS CARTRIDGE COMPANY, Cincinnati, Ohio, Eastern branch, 80 Chambers street, New York: An attractive lithographed calendar, the pictorial part of which is entitled "Dawn of a New Era," having reference, of course, to Peters Ammunition.

THE MARLIN FIRE ARMS COMPANY, New Haven, Conn.: The company are distributing a dainty desk calendar, printed in 12 colors, which they will be pleased to send to any of our readers on receipt of stamps to pay postage.

DETROIT WIRE & IRON WORKS, Detroit, Mich.: Calendar with reproduction of "An Egyptian Sunset," and calling attention to the company's manufactures of Wire Goods, Wire Cloth, Stable Fixtures, &c.

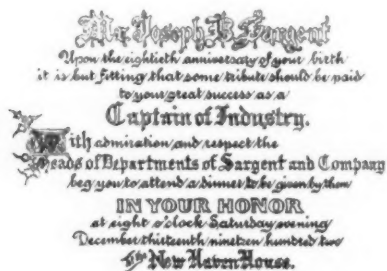
CHAMPION RIVET COMPANY, Cleveland, Ohio: Calendar for 1903, the decorative part of which is a reproduction of "The Flight of Time."

CHARLES MILLAR & SON COMPANY, Utica, N. Y.: Supplies for plumbers, steam fitters, tinnerns, water works, factories and contractors.

GOODELL-PRATT COMPANY, Greenfield, Mass.: Manufacturers of Tools.

## DINNER TO JOSEPH B. SARGENT.

ON Saturday evening, December 13, a complimentary dinner at the New Haven House, New Haven, Conn., was tendered to Hon. Joseph B. Sargent on the eightieth anniversary of his birth. The affair was arranged by the heads of the various departments of the concern, who indicated in this way the honor and affection in which Mr. Sargent is held, and gave expression to their recognition of his position as one of the greatest of Hardware manufacturers. The spirit of the occasion is indicated in the invitation which was extended to him. This was bound in leather and printed on illuminated parchment, bearing on the outside a monogram with the dates 1822 and 1902, and read as follows:



While the occasion was thus a fitting tribute to him as a captain of industry, it was given by men who have known him for many years, some of them for almost half a century, and there was in it much of the personal element which gave it warmth as the expression of the loyalty and regard in which he is held by his lieutenants. As befitting the occasion it was a gathering of those prominently identified with the house of Sargent & Co. At the head of the table 80 superb roses told the years of the career of the great manufacturer, while the gathering of something like 70 men who hold responsible positions in the factory or its leading branch houses indicated the extent of the enterprise developed and directed by him. The menu thus gives the names of the special guests with the date of their connection with the house:

Joseph B. Sargent, 1851.	Joseph D. Sargent, 1880.
George H. Sargent, 1853.	G. Lewis Sargent, 1883.
Thomas J. Atkins, 1856.	Russell Sargent, 1884.
William J. Ladd, 1856.	Bruce Fenn, 1889.
George Munson, 1861.	John Sargent, 1894.
Charles L. Baldwin, 1864.	William A. Rice, 1897.
Henry B. Sargent, 1871.	Ziegler Sargent.
Edward R. Sargent, 1879.	

The absence of George H. Sargent, who would have had the place of honor next to his brother, was much regretted, but he was prevented from attending by a passing indisposition. Fitting recognition of his part in building up the business of the company was made by his brother and by many of the speakers of the evening.

When the party took their places at the table the gentlemen who tendered the dinner to Mr. Sargent found a surprise awaiting them. Each of them found at his place a handsome silver tankard with his name appropriately engraved thereon. These, which are represented in the accompanying illustration, were presented to the heads of departments by the sons of Mr. Sargent.

After the dinner, which was an excellent one, Charles Clark Adams, who became identified with the company in 1876, officiated as toastmaster in his usual happy way. The toasts, according to the programme, were as follows:

EVERETT E. LORD.....	For the Committee.
JOSEPH B. SARGENT.....	To the Committee.
WILLIAM A. RICE.....	For the Main Office.
THOMAS J. ATKINS.....	For New York.
ROBERT E. HOFER.....	For Boston.
GEORGE H. SARGENT.....	For Everybody.
WILLIAM N. THOMAS.....	For Philadelphia.
WILLIAM H. WRIGHT.....	Impressions of a Newcomer.
MICHAEL F. CAMPBELL.....	For the Mechanics.
HENRY B. SARGENT.....	For the Guests.

The programme was carried out as above, except for the absence of George H. Sargent, in whose stead Wil-

liam J. Ladd of New York was called upon and made a felicitous address, full of happy hits and embodying a high tribute to Mr. Sargent.

On behalf of the committee Mr. Lord made an interesting address, from which we make the following extracts:

## Mr. Lord's Address.

It would be ungracious to delay the acceptance of the beautiful tokens of regard and memento which adorn these tables. The givers know us all well enough to believe us when we say that our thanks are sincere and appreciation great. We are sure that the flavor of any beverage committed to the care of these tankards will be improved—from boneset tea to Apollinaris. Whatever may be our buttonhole decorations and whatever these lovely mugs may hold, we shall ever drink deep to the givers.

For a man used to this sort of thing, it would be hard to find a subject more worthy of oratory—and to do justice to the guest of honor to-night would argue a power of speech beyond mine. I have not been delegated by my fellows to review the marvelous career of the man who, above all of his generation, has made one industry great. The duty assigned to me concerns the relations of a great commander-in-chief to his lieutenants. What a relief it is to know that a man's age is not governed by his birthdays.

What an example of hope we have that we may yet live long enough to be something and do something, even if we begin now. Here is a man who has taught us how to live, not by proclamation, but by living; who has imparted lessons of industry, not by waving hands, but by his advancing form, always ahead in the distance; who has shown us that a man may be always kind and always firm, and sometimes kindest when he is firmest. As with "John Brent," he has known whether to take a man "by the hand gently, by the shoulder roughly, or by the nose insultingly," when he needed to be led out of himself and into a more useful personality. We have learned from him that some men need to be welded onto others, to be fluxed down in the crucible and reamalgamated, and more yet must be thrown into the tumbling-barrel of common contact with their fellows and reduced by attrition to their proper shape and finish.

We have learned that truth is never to be feared and that honest error is ever better than sneaking sham. We have seen the power of steadfast purpose resolve into great result, and the personality of one man ramify through every department of a magnificent industry. We have been taught to be shrewd if necessary, but honest always; to be active and energetic, but with care and prudence; that justice is ever due to each however humble, and that mistakes are more easily avoided than corrected. As to what purpose we have improved these teachings is not for me to say. If our eyes have been dull to see or our hearts to learn the shame is ours, and the loss as well. Suffice it to say that whatever our practices may indicate, our purposes have been better and our aims higher because we have known and worked with a great man. That you, Mr. Sargent, may have a slight personal token of this dinner given in your honor by the men for whom I speak, we have engrossed upon parchment our invitation for this evening.

Let the parchment stand for our high regard which shall ever endure; let the red stand for the warmth of our affection, may the blue indicate an undying loyalty to the name you bear and bequeath, and the burnished gold thereon stand for the luster which your name has given to the business world, and may it also represent the quality of your public service and the purity of your private life.

## Mr. Sargent's Response.

When Mr. Sargent rose to respond he was given a most enthusiastic greeting, the warmth and sincerity of which were evident. His remarks were, as befitted the occasion, largely retrospective and abounded in reminiscences and incidents, as he reviewed with interest to his hearers the small beginning with but few helpers, to the present time with the numerous members of his



business family, who, as he said, had so many years stood by him in all his efforts to plant and make grow the great Hardware Tree under which they all thrived. He expressed frankly his appreciation of the value of the services of his associates by whom his plans had been carried into effect and to whose ability and fidelity he generously ascribed much of the success which has been achieved by the house of Sargent & Co.

The evening passed most pleasantly, as the various speakers contributed their part, and all entered into the spirit of the occasion, greatly enjoying the opportunity thus to honor their chief and to come together as a body of men whose best efforts are given to the furtherance of the interests in their charge. The spirit of loyalty and enthusiasm to the great house with which they are identified was very noticeable and has doubtless done much during the years to aid in achieving the commanding position attained by it. The songs and a poem,



which were specially composed for the occasion, were full of references to Mr. Sargent, and in some cases to other persons connected with the firm, and as they thus possess a general interest, we give them herewith.

#### The Songs.

The following, written by W. H. Wright, was sung to the tune of "Marching Through Georgia":

Here's the good old Sargent crowd,  
And solid men are we,  
Meeting one another  
In a way that's good to see,  
Meeting here to celebrate the birthday of "J. B.,"  
While we are working for Sargent.

#### Chorus.

Hurrah! Hurrah! on this our jubilee;  
Hurrah! Hurrah! for the honored man "J. B."  
So we'll sing the chorus  
For the men who are to be,  
While we are working for Sargent.

So we'll pull together, boys,  
With strong and steady hand,  
To make the name of Sargent be  
The best known in the land,  
From ocean unto ocean  
And to "India's coral strand,"  
While we are working for Sargent.

The following, also composed by Mr. Wright, was sung to the air of "John Brown's Body Lies Moldering in the Grave":

Our promise books are loaded till we don't know where we're at,  
Foremen and contractors are all talking thro' their hat,  
And the man who keeps us guessing is the man who's at the bat.

"B. F." is at the bat.

#### Chorus.

Glory, glory, hallelujah,  
Glory, glory, hallelujah,  
Glory, glory, hallelujah,  
B. F. is at the bat.

The telephone is ringing, you can hear it half a block,  
You hardly need to answer, 'tis the old familiar knock;  
"These goods cannot be promised for we haven't any stock."  
"W. A. R." buys the stock.

Chorus, &c.—"W. A. R." buys the stock.

For every kind of trouble and for every sort of woe  
There's always one specific that will set the face aglow,

And for us as well as others 'tis the cheerful sight of "dough."  
And "J. B." finds the "dough."

Chorus, &c.—And "J. B." finds the "dough."

#### OUR GRAND OLD HARDWARE MAN!

Air—"The Good Old Summer Time."

There's a man we adore,  
Tho' he's eighty and more,  
Grand old Hardware King!  
Tho' he started in liddle,  
Just securing his victuals,  
Now he's Hardware King.  
In the fifties he started,  
But was never half-hearted,  
Big business to bring;  
And now he is rated,  
Beyond all who waited,  
Grand old Hardware King.

#### Chorus.

He's the grand old Hardware King.  
He's the grand old Hardware King.  
And his splendid boys and girls  
Happiness doth bring.  
They are all of the true-blue blood  
And stand at the full-tide flood,  
Where their business throbs and whirls,  
With our old Hardware King!

He's a rigid man in trade,  
And has never been afraid—  
This old Hardware King—  
To hold men where they should be,  
Or else he never could be  
Such a Hardware King!  
But if one sticks to the right  
And holds to a contract tight,  
This old Hardware King  
Shows a heart kind and tender.  
Hail the name that we render—  
Grand old Hardware King!

#### A Poem.

The following poem, composed for the occasion "by a friend," was also read:

#### I.

The Grand Old Man who is with us to-night,  
Whose eye is so keen with mind clear and bright,  
Began years ago his strenuous life,  
A model to all. With resources rife  
Quite single handed he started his work,  
Bravely encountered what most of us shirk,  
Wisely selecting some friends good and true  
He carefully planned what together they'd do.  
We like to recall the many demands  
Eagerly met by these ready right hands,  
Which did all they could to help on the cause  
And now take occasion to join in applause.

#### II.

Work to most men is not something they'd choose,  
That is because they're not touched by the muse.  
He who's a poet, like this lively son,  
Finds in it only a high kind of fun.  
Some are contented with castles in Spain;  
They toil all their lives, their efforts are vain.  
They fancy they have a vast retinue,  
But seldom, alas, their dreams become true.  
The walls they erect soon vanish like mists—  
People inside are mere will o' the wists.  
So after all they have nothing to show  
But records of various sorts of woe.

#### III.

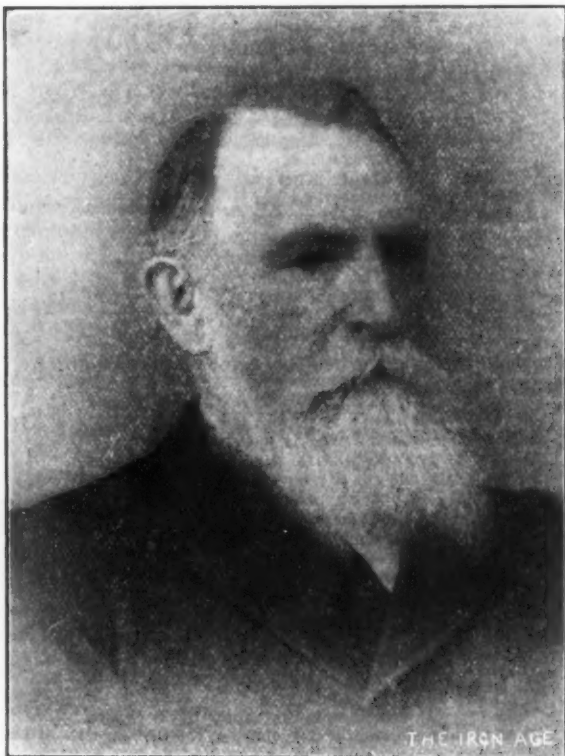
This youth with his eye fixed on an ideal  
Had magical gifts that made it all real.  
"I'm building some more, my dear brother 'G.'"  
"Build all you damn please, but don't bother me."  
You say that he used to work like old Nick,  
Look at him now piling brick after brick.  
When these are well spread all over the ground  
He'll take his Shovel and fill in the sound.  
Then when on this land new buildings are quartered  
We'll venture to bet that the stock won't be watered.  
Why do you say that his work is well done?  
Bless your dear hearts! It's only just begun.

#### IV.

With Atkins, Munson and Ladd from New York  
To hold up their ends (they're not light as cork)—  
Adams! ever ancient and hon'able—but then,  
If all are not ancient, we're all hon'able men.  
We'd like to dilate on Bradford and West,  
Also a dozen or two of the rest.  
And there is one man I have in my paw—  
You'll guess, to make rhyme, it must be John Shaw.  
What matter the names! Each does what he can  
To follow the lead of this noble man.  
No more could we say tho' verses weren't brief;  
Fill up your glasses—Here's Hoch to the Chief.

### Joseph B. Sargent's Career.

In the parish registers of Northamptonshire and of the city of Northampton, England, is recorded the ancestry of the Sargent family, from Hugh Sargent of Courteenhall in 1554 to William Sargent, the immigrant ancestor, who, with his family, emigrated from the city of Northampton and arrived in Boston, Mass., in 1638, and settled at Mysticside, a suburb of Boston, later made a part of the town of Malden and now the town of Everett. He was a manufacturer and merchant in Northampton, but on his arrival at Boston he registered as a planter. He soon bought land at Mysticside and engaged in farming. He is on record as a "Godly man" and in the first year of his arrival he was made a freeman of the colony, was, with his wife, admitted into the church and soon after was appointed a lay preacher. His father and his brother Joseph were Mayors of Northampton. He built a substantial dwelling house for his family which is now occupied, but



*J. B. Sargent*

altered and enlarged into a fairly up to date suburban family residence.

In the year 1741 some of his descendants removed to the newer town of Leicester, 6 miles west of Worcester, where Joseph B. Sargent was born on December 14, 1822. Mr. Sargent's father, Joseph D. Sargent, entered into the manufacture of hand cards during the second war with England, 1812-1814, and continued in the business most of the time to his death in 1849. Mr. Sargent's mother was quite an active worker in the Abolition movement in Boston, co-operating with William Lloyd Garrison and Wendell Phillips.

From the age of 7 to 17 most of Joseph's life except the summers was devoted to the requirements of Leicester's famous academy. During the summer time he practiced almost every variety of farm work on his father's farm.

As a boy Mr. Sargent had an opportunity of living the easiest kind of a life at home, but he preferred to go to work for himself. Accordingly he set out for the dry goods business. In 1840, at the age of 17, he obtained a situation as boy in the largest but one of the retail dry goods stores in Boston at a salary of \$1 per week for

the first year. This store is the one which has since become the Jordan & Marsh firm. As office boy, Joseph's duties were to sweep out the store, take care of the furnaces and carry bundles in the neighborhood.

One of the best stories of Mr. Sargent's boyhood concerns his work as errand boy. He had been sent one day to the better part of the city in order to show a "Paisley Shawl," which were all the fashion at that time. The house at which he called had a high flight of steps from the sidewalk, and it was the custom for tradespeople there to call at the basement door. But this boy walked up the staircase, and there explained his errand to a waiting maid. As the boy was to wait until the shawl was tried on, the waiting maid said: "Come down to the basement until the lady is ready to let you know." But the reply from young Mr. Sargent came: "You may tell your mistress that I come from a family that doesn't go in at basement doors." The mistress heard the remark, and thereupon cordially invited the young man into her reception room, and ever thereafter whenever she visited the store she always made it a point to inquire after this same young man.

His rise from office boy was rapid. After six months' time his salary was raised to \$400 a year. In his third year, over the heads of 40 clerks, some of whom had been in the store for 20 years, he became the buyer for the business. In 1843 he went into the general store business in the State of Georgia, where he remained till after the death of his father in 1849, when he sold out his business and went into business in New York as a commission merchant, trading mainly with his Southern friends in trade.

In 1850 he bought a half interest in the manufacturing business so long carried on by his father, and soon after bought the other half interest and became sole owner. His place of business in New York was for several years at 24 Cliff street, occupying most of the building. A still younger brother managed the factory at Leicester.

While manufacturing on his own account Mr. Sargent sold as agent the goods of other manufacturers of Hardware. As business increased his brothers became interested in it and they removed to larger stores from time to time on Beekman street, Chambers street, and finally to Leonard street, where the New York house is now located.

Among the manufacturing concerns whose goods they sold was that of Peck & Walker of New Britain. This concern in 1852, to get more capital, formed a joint stock corporation capitalized nominally at \$100,000 with only \$50,000, mostly in property, paid in. The concern depended largely on borrowing from banks. In the panic of 1857 they came to grief, owing \$42,000 advances on their stock in Mr. Sargent's store in New York. He was obliged to take the whole concern to protect himself and thus became permanently a manufacturer of General Hardware without ever having spent a whole day in a factory prior to his going to New Britain to take charge of the business of that concern.

He continued the business successfully in New Britain until he moved it to larger quarters in New Haven in 1864, where it continued to grow and expand, as shown by the immense plant of to-day.

Stories of Mr. Sargent's business sagacity are numerous, but here is one that will illustrate it as well perhaps as any other. Just before the war broke out and he was in the business of manufacturing "cotton cards," an arrangement for treating raw cotton, he realized that there would soon be a scarcity of sheep skins, the leather from which was used in making the cards. So he immediately went to work getting all the available skins, for he figured that in case of war people would no longer be killing sheep. At Boston he got \$81,000 worth of skins. He got some also in New York. For all these he paid from 20 to 32 cents apiece, and within two years they were worth \$1.50 each, netting Mr. Sargent probably a sum near \$400,000.

Mr. Sargent has been twice Mayor of New Haven and was once Democratic candidate for Governor of the State, but with these exceptions he has never been much before the public except as a prominent manufacturer.



The magnitude of the plant of which Mr. Sargent is the head will be appreciated from the fact that it has a floor space of 28 acres, has 31 miles of belting, 2797 automatic machines, 8 miles of shafting and a pay roll of nearly 3000 men. The company's catalogue shows that of Locks and their trimmings they make 14,102 items, of miscellaneous Hardware 11,450, and of Coffin Trimmings 4893, making a total of 30,445 separate and distinct articles produced in the factory. At the present time the company are engaged in building a large addition to the plant, which will still further increase its capacity and working force.

The complexity and extent of the plant of Sargent & Co. is indicated in the following list of the heads of departments who were present at the dinner, while the length of time they have been connected with the house reflects the policy which has been constantly pursued of developing from the ranks those who are to take positions of responsibility:

Charles H. Bradford, 1858.	Julius H. Bitterlich, 1882.
Frank G. West, 1861.	Albert A. Page, 1883.
G. Truman Smith, 1865.	Joseph H. Cherry, 1884.
Patrick McCarthy, 1867.	Henry F. McCollum, 1884.
Frederick A. Jackson, 1869.	John W. Scott, 1884.
Theodore A. Kapitzke, 1869.	Charles Smith, 1884.
Thomas V. Hussey, 1871.	Charles H. Cutts, 1885.
Michael F. Campbell, 1872.	Fred. W. Fellows, 1885.
John Perrie, 1872.	Robert E. Hofer, 1885.
John H. Shaw, 1873.	F. Joseph Chatterton, 1886.
Patrick J. Falsey, 1874.	Robert A. MacArthur, 1886.
Richard F. Shephard, 1875.	James Deuny, 1887.
Charles Clark Adams, 1876.	Michael J. O'Mara, 1887.
Harry H. Weed, 1876.	John B. Freysinger, 1888.
Michael F. Griffin, 1878.	William N. Thomas, 1888.
David Steele, 1878.	Harry J. Broadhurst, 1890.
William E. Stevens, 1878.	James A. Hughson, 1891.
Leroy J. Kirkham, 1879.	Augustus D. Baker, 1893.
Frederick N. Stevens, 1879.	William H. Bradley, 1893.
George F. Wierper, 1879.	Arthur R. Kirschner, 1893.
William J. McCoy, 1880.	Willis S. Loveland, 1895.
Frank W. Willoughby, 1880.	Newell L. Taylor, 1895.
Daniel J. Allen, 1881.	Charles A. Wagner, 1896.
William H. Kirschner, 1881.	Ernest S. Vinten, 1898.
Everett E. Lord, 1881.	James R. Haldeman, 1900.
Frank J. Monz, 1881.	William H. Wright, 1900.
Francis P. Ryan, 1881.	William E. Baily, 1902.

### PRICE-LISTS, CIRCULARS, &c.

THE LAWSON MFG. COMPANY, 115 Lake street, Chicago, Ill., New York office, 107 Chambers street: Circular devoted to illustrations and price-list of Matchless Double-Acting Floor Spring Hinges.

COEB & DREW, Plymouth, Mass., and Rock Falls, Ill.: Price-lists devoted to Spring Cotters, Spring Keys, Stove and Tire Bolts.

THE REED MFG. COMPANY, Kalamazoo, Mich.: Catalogue illustrating Cultivators, Harrows, Wing and Shovel Plows, Hand Hay Presses, Seeders, &c.

THE I. A. WESTON COMPANY, Syracuse and Jamesville, N. Y.: Ball Bearing Wheels and Parts for automobiles and carriages. These are illustrated and described, with prices, in a catalogue.

A. D. HALL & SON, 33-41 Spice street, Boston, Mass.: Hall's Standard Refrigerators. An illustrated catalogue and price-list shows the goods in a variety of styles and sizes.

THE GOSHEN SWEEPER COMPANY, Grand Rapids, Mich.: Illustrated catalogue and price-list of Carpet Sweepers.

C. H. ELLERT, Evansville, Ind.: Catalogue showing the Home and Handy Shoe and Harness Repairers, these being sets of tools in wooden boxes for shoe and harness repairing.

THE STANDARD MFG. COMPANY, Galesburg, Mich.: Wind Mills, Tanks, Towers, Pumps, &c., are shown in a catalogue and price-list.

THE UNION COMPUTING MACHINE COMPANY, 3 Union square, New York: Catalogue devoted to illustrations, descriptions and prices of Union Cash Registers.

THE AVERY STAMPING COMPANY, Cleveland, Ohio: Illustrated circular relating to Shovels, Spades, Scoops, Post Hole Diggers, Snow and Furnace Shovels and Side-walk Scrapers.

## Hardware Organizations.

### Southwestern Kansas and Oklahoma Implement and Hardware Dealers' Association.

The third annual convention of the Southwestern Kansas and Oklahoma Implement and Hardware Dealers' Association was held at Wichita, Kan., December 2, 3 and 4. The meeting was called to order by the president, Charles Watson. Following his annual address the report of the secretary was read and also a statement of the financial condition of the association. Interesting papers followed on "Reciprocal Insurance," by H. C. Taylor; "The New State Tax Law," by Earl W. Evans; "Trusts, Their Effect on the Implement and Hardware Trade," by C. H. Smythe; "The Traveling Man," by W. A. Bauslin; "The Rise in the Prices and the Cause," by Ed. Greer; "Relation of Dealer to Manufacturer," by W. T. Brown; "What Should This Association Do to Increase Its Growth for the Future?" by J. R. Van Zandt; "How Credit Should be Extended and What Profit the Dealer Should Have," by Geo. J. Gensman. The meeting closed by the nomination and election of the following officers: John Baumstark, president, and A. J. Thompson, vice-president.

### Ohio Harvester and Implement Dealers' Association.

The Ohio Harvester and Implement Dealers' Association held its regular meeting at Piqua, Ohio, December 4. Important subjects were brought before the meeting and referred to the proper committees for their action at the next meeting, which will be held at Dayton, Ohio, February 5, 1903. An enthusiastic and well attended meeting was held. Much interest is being exhibited in the work of the association, the secretary's report showing that the membership had been more than doubled in number since the last meeting.

### Kansas City Implement, Vehicle and Hardware Club.

The Kansas City Implement, Vehicle and Hardware Club held its monthly meeting and dinner at the Coates House on December 8. The following officers were installed: W. F. Tuttle, president; R. F. Crawford, first vice-president; H. B. Topping, second vice-president; J. E. Baird, secretary, and A. G. Trumbull, treasurer. The retiring president, C. D. Parker, in reviewing the progress of the club during the past year, showed that 13 concerns had been added to the membership list, while only two had withdrawn. The business session was followed by a programme of music, recitations, &c., under the direction of the Entertainment Committee.

### TRADE ITEMS.

GEORGE H. BARTLETT, who has for nearly 35 years represented T. Rowland's Sons in the West, severs his connection with the Shovel business January 1. While there is a possibility of his becoming identified with one of the Shovel manufacturers outside the association, it is understood Mr. Bartlett has no such intention, but wishes to devote more time to the other lines he has so long represented and to his own business, the manufacture of School Slates and Roofing Slate, this business having grown rapidly during the past four years. Mr. Bartlett is president of J. S. Moyer & Co., lessees of the old Bangor quarry, and general manager of the National School Slate Company.

THE WESTERN METAL SUPPLY COMPANY, San Diego, Cal., have purchased the business of McKenzie, Flint & Winsby of that city. The change in management will take place January 1, at which time Joseph A. Flint of the latter company will retire. The capital stock of the new corporation is \$500,000. The directors of the company are B. W. McKenzie, E. Winsby, Geo. M. McKenzie, W. H. Beckett and W. H. Airhart. The new corporation will deal in General Hardware, Iron and

Steel, Fittings and Valves, Pumping and Hydraulic Machinery, &c.

### JOHN WILSON BUTCHER KNIVES.

**J**OHN WILSON, for whom Hermann Boker & Co., 101 and 103 Duane street, New York, are exclusive selling agents for the United States, issues a circular in which he states that there has been placed on the market a brand of Butcher Knives packed in boxes labeled so as greatly to resemble those in which the John Wilson Butcher Knives are packed. In fact it is



remarked the resemblance is so great that casual observers might not detect the difference, especially as the Knives are said to be of the same pattern as the genuine John Wilson Knives. Mr. Wilson calls attention to the fact that the genuine John Wilson Knives have for the 150 years or more during which they have been on the market borne the brand of four peppercorns and a diamond, as shown herewith, and that no Knives are genuine John Wilson goods unless they bear that trade-mark.

### MAKE HARDWARE STORE WINDOWS ATTRACT.

BY BURT A. TURNER.

**T**HE opinion that window displays are primarily to attract attention is only half right. A live monkey might attract attention to a store, but would it sell Refrigerators? A display's most important function is to call attention to the fact that certain lines are carried. Further, it may tend to create a want.

Neat, serviceable Fishing Tackle or easy appearing Hammocks will often cause a person who had no previous intention of procuring such articles to come into the store and make a purchase. An exhibit of Nails and Barb Wire would be of little value, because it is taken for granted that a Hardware store sells both.

But there are many things in a Hardware store about which the average customer does not know. Should he be in need of such he will be at a loss unless he learns through displays or other advertisements where those articles are on sale. For example, if a man wants a Chandelier and does not know just where to go for it, the first store he sees displaying Chandeliers will probably sell him. Avoiding staples, we should fill our windows with novelties, lines frequently not carried by Hardwaremen and goods which sell only during a certain season of the year.

The last requisite of a display is that it makes a good impression. To do this only one line of goods and only the best grade of that should be shown. A window full of cheap Cutlery might cause quite a run on those articles, but would do so at the expense of the store's reputation. Suppose a stranger in town should want to buy a set of tools and be referred to a store making such a display, would he not think "That is the place where I saw those bargain Knives"? And would he not also think that if the Knives were cheap the Tools would be the same?

In addition to advertising the lines exhibited a window display should benefit the whole store. If the best goods are used, if the arrangement is such that they are shown to the best advantage, and if the window as a whole is neat and clean, this will be the result. If not, the window display has fallen short of the usefulness it should possess.

Dr. Ekelberry has just opened a new Hardware and Stove store in Galena, Ohio.

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## RETAIL IMPLEMENT DEALERS' ASSOCIATION OF SOUTH DAKOTA, SOUTHWESTERN MINNESOTA AND NORTHWESTERN IOWA.

THE fourth annual convention of the Retail Implement Dealers' Association of South Dakota, Southwestern Minnesota and Northwestern Iowa was held at Sioux Falls, S. D., on the 9th, 10th and 11 inst. The first session was called to order on Tuesday evening by M. D. Thompson, president, who introduced Hon. H. H. Keith, city attorney, of Sioux Falls, who delivered an address of welcome. J. D. Bartow of Plankinton, S. D., responded on behalf of the association.

### President's Address.

Mr. Thompson then made his annual address, from which we make the following extract:

There is life in our association to this extent only, that we plan for the future and co-operate for the completion of those plans. Complaints have been made by a few that the object of this association has failed because some of its members have violated some of its rules. We all realize that to bring about the best results through organization every member of the organization has a duty to perform, for it is only by the united efforts of the individuals that we can hope for success. It must be remembered, however, that no special power of a legislative or judicial nature has been conferred on this association. Members who insist that it has failed because some of its members are price cutters in their territory lose sight of the great majority who are loyal to its principles. One thing is certain, as experience has shown, that dealers who are members of an association similar to ours are far more likely to be fair than those in a community where no such organization exists.

There are three items in the October *Bulletin* of the Western Retail Implement and Vehicle Dealers' Association which I desire to commend for consideration to all dealers who have no faith in organization or indifferent to it. The first is from the secretary's report to the Board of Directors. It tells how, with an increased membership, the claims filed by members against the manufacturers and jobbers on account of irregular sales and other trade transgressions were in the first nine months of the current year only 59, as compared with 105 during the corresponding period of 1901. This, you may be sure, does not mean the wholesalers have afforded fewer opportunities to violate the ethics of trade. It means that they are rejecting such opportunities in order that they may merit the confidence and patronage of the association members.

The second item relates to the disposition of claims, and briefly announces that over 75 per cent. of the claims filed this year have already been satisfactorily disposed of. The association is powerful enough to compel trade offenders to pay the penalty of their commercial sins. Every association can wield the same power if the dealers within its jurisdiction will support it.

The third item tells how a curbstone dealer, selling Vehicles by catalogue, to the disadvantage of regular dealers maintaining large stocks, paying taxes and supporting the institutions of the community, applied for membership because he was no longer able to obtain goods. How, also, he reported himself as a member in order to obtain goods, and how he was "turned down" the second time when the shipper learned that he was not identified with the association. This man recognized the power of the association, as did also the shipper.

Will any dealer read of those things and still say that organization accomplishes nothing for the benefit of the trade?

I believe that one of the principal reasons why the average retail dealer does not attain the full measure of success is on account of his insincerity. The retail implement dealers are the most optimistic men engaged in business. They do more for the customer with less regard in moral or financial support and expend more energy with less per cent. in return than any other class of business men. This is not because the Implement dealer is the most unselfish mortal, or in general

has less business ability and does not know how to conduct his business along business lines. It is partly because they are not acquainted with or do not have the confidence they should in their neighbors. They often rely too much on the word of their customers, and not enough on that of their competitor. They go on the theory that if they sell their competitor's customer to-day without profit they get his good will and influence and the privilege of handling his future business, hoping at that time to realize their profit, but history repeats itself and they usually get it, too, but without profit. They deal too much in expectant profits, and not enough in the kind that keeps the bank balance on the right side of the ledger.

To overcome these troubles is one of the objects of this association. We are not in favor of high or illegitimate margins on Farm Machinery and Vehicles, but we strive to secure for the dealer a just and reasonable remuneration for the capital and energy invested, and to establish confidence and reciprocal relations between the members of the association. The true business man acts from principle, not merely by interest; by the past and future, not merely by the present. He meets immediate duties, he deals with existing demands, but he does this with the guidance of rules—the knowledge of which the past has given him.

Short addresses followed by J. J. Gaston, Winterset, Iowa, and N. S. Ketcham, Marshalltown, Iowa.

After the appointment of the following committees the convention resolved itself into a smoker and social session:

COMMITTEE ON CONSTITUTION AND BY-LAWS: O. K. Stakke, Woonsocket; R. F. Finch, Ipswich; W. S. Hill, Alexandria; O. W. McLaughlin, Highmore; J. J. Nissen, Yankton.

COMMITTEE ON RESOLUTIONS: B. G. Wattson, Chamberlain; C. D. Cheatham, Aurora; G. Crossman, Fulda, Minn.; A. D. Maxwell, Arlington; Jonah Jones, Sioux Falls.

COMMITTEE ON NOMINATIONS: Roy Williams, Sioux Falls; E. B. Van Alstine, Mitchell; J. D. Bartow, Plankinton; E. C. Barton, Vermillion; E. F. Gross, Gettysburg.

### Secretary-Treasurer's Reports.

At the Wednesday morning session the first business on the programme was the presentation of the report of W. S. Hill, as secretary, in which it was declared that the association was in better condition than ever before. The membership had increased quite materially and a pleasant relationship seemed generally to prevail between the dealers, on the one hand, and the manufacturers and wholesalers on the other, and between the dealers themselves. There was certainly a more friendly feeling in the trade and increasing mutual confidence. Mr. Hill also made his report as treasurer, showing a balance on hand of \$7.01.

### Penitentiary Binding Twine Plant.

The question of the proposed installation of a binding twine plant at the Sioux Falls penitentiary was then discussed. The general sentiment of the delegates, it was speedily shown, was strongly opposed to the State authorities establishing such a plant at the penitentiary. The only delegate who favored the proposition was D. H. Evans, Tracey, Minn., who explained at length the workings of the binding twine plant at the Stillwater, Minn., penitentiary. Those who spoke in opposition to the installation of a plant of this kind at the Sioux Falls penitentiary were George Sparling, Marshall, Minn.; W. B. Brown, Pipestone, Minn.; K. O. Stakke, Woonsocket; John A. Bowler, Groton, ex-warden of the Sioux Falls penitentiary; J. D. Bartow, Plankinton; W. S. Hill, Alexandria. A motion finally prevailed that a legislative committee of three be appointed by the chair, and that a per capita tax of 50 cents on the membership be levied to defray the expenses of investigating the matter of establishing a twine plant.

### Selling Threshing Machinery.

K. O. Stakke of Woonsocket read a paper entitled "Are Present Methods of Selling Threshing Machinery Satisfactory to the Dealer," which opened up a good deal of discussion, those taking part comprising Geo. Sparling of Marshall, Minn.; W. B. Brown of Pipestone, Minn.;

Roy Williams of Sioux Falls; J. J. Gaston of Winterset, Iowa, and J. D. Bartow of Plankinton.

G. Crossman of Fulda, Minn., was on the programme for an address on "How Best to Increase Trade," but he was unable to be present, and this subject was briefly discussed by E. F. Gross of Gettysburg, after which the convention adjourned until Wednesday evening.

#### Business Courtesy.

The evening session was initiated by an admirable paper on "Business Courtesy," by B. G. Wattson of Chamberlain, from which we make the following extracts:

After giving this subject some thought it seems to us that there is a slight distinction between mere courtesy and business courtesy. Courtesy is a quality which should never be lost sight of in any of our relations with mankind under any circumstances, whether in business or out of business. Business courtesy pertains more particularly to a certain indescribable mutual sympathy, respect or consideration for each other existing among the inhabitants of the business world.

Under this head we are requested to touch upon "the treatment of traveling men" and "answering correspondence." Courtesy is defined in few words as "an act of civility or respect." We believe many of us thoughtlessly consider that we have exercised business courtesy when we have extended to any person with whom we have had any transaction or association the ordinary rights and privileges accorded him by the constitution. We have not gone out of our way to obstruct his progress, so long as he has not interfered with ours, and we are under no obligation to show him favors, because we do not ask or expect them from him.

Business courtesy, then, would be construed to mean the conduct of all business transactions, with due regard for the privileges and rights of all classes with whom one has business relations. We are called upon to exercise this virtue less with these two extremes perhaps than with the intermediate classes constituted by our business competitors and the traveling representative of the manufacturer and jobber.

However, due regard for the rights and privileges of persons does not in our opinion constitute business courtesy. It is no doubt the foundation upon which the delicate framework of courtesy is established, but does not cover the meaning of the definition. One may concede a person his privileges and rights without showing him either civility or respect. The traveling man has the same right as the customer to enter your place of business and the privilege of introducing himself, at which time he should be given the opportunity of explaining the object of his visit, during which he should have your courteous attention and a civil reply.

If occupied with affairs which cannot be delayed he will thank you for being advised of the situation, and will call again when you have more leisure, perhaps a number of times before the desirable spare moment may be had, through all of which he exhibits a patience and gentlemanly bearing deserving admiration and bespeaking emulation by some of us. We think it is but fair to the traveling salesman on most occasions to give him assurance at once whether or not you will look over his line or whether you are in the market for his goods.

A statement of your position as regards buying or inspecting a line with the view of future buying—which may be made in a moment in few words—will often not only insure you from annoying interruption, but also save the traveling man valuable time and unnecessary expense. The traveling man as a rule is a very conscientious person, concerning his duty to the house which he represents. He does not wish to bore or annoy you with importunities to inspect or buy his wares, yet he does not feel satisfied that he has done full justice to his employers until he has given you every opportunity to perceive the superiority of his line of merchandise over others of like kind and is certain that he cannot convince you that you are irretrievably injuring your business by passing up his goods.

If he does not succeed in showing you where you

are neglecting a chance to improve your business, he is an exception to the rule if he does not "retire in good order" without having given you the slightest cause for irritation or offense. His loyalty to the people whom he represents commands our esteem. Why, then, should not his courteousness be met with an equal show of politeness and good nature on our part?

Why should a merchant act as though he were personally aggrieved at being solicited to consider a proposition which will very often yield him a nice profit, and where he perhaps is chiefly benefited, and which will cost him nothing but a pleasant word if he does not care to embrace it?

We will not dispute that there sometimes seem to be grounds for forgetting for a moment the bounds of patience when a multitude of (to us) important duties are forced into a limited time. Perhaps you have an hour to complete work on which you ought to devote three, and that hour is drawn upon and shortened by numerous interruptions, ordinarily welcome. You sometimes accumulate an inordinate quantity of self appreciation if you are able to control your impatience, look pleasant and treat all comers with courtesy.

We have all of us no doubt experienced the effect a carefully worded, courteous letter of explanation has in the case of a defective machine or Buggy or Wagon, in hastening the adjustment of the claim to our satisfaction, therefore the question of courtesy recommends itself to us for cultivation as a matter of policy as well as an item of self improvement.

The office work of the average retail establishment occupies or should occupy a considerable portion of the proprietor's time, or in case of a partnership the time of the member under whose supervision this department is conducted, and not the least of the duties devolving upon him is the care of the correspondence.

Very few letters are received that should not be acknowledged, and very many should be answered in detail. We speak of letters from customers, jobbers and the like, other than circular letters; we receive numerous of the latter, of course, many of which request a reply, but, unless stamps or postal cards are inclosed, seldom get it. We cannot understand the impulse or lack of impulse which allows a business man to absolutely neglect his correspondence, his only communication with the wholesaler being through the traveling agent at settlement time; it seems incredible, yet we know of a few—a very few—who do business on about this basis, never paying a bill until drawn upon through the bank, and, of course, losing the discount, yet who claim to be successful.

We do not know of any such, however, belonging to this association. In most cases, we believe, nothing is lost by devoting a little extra time and a stamp to answering a letter on a subject which at the time may have no particular interest for us. We believe it is unnecessary for us to even suggest the advisability of replying to letters on subjects in which we are directly interested, and that without any delay.

We think we are more often called upon to exercise genuine business courtesy in its most delicate sense among our brother dealers than with any other class. Between rival merchants in a town, as well as those of competing towns, we will not attempt to say at what point business courtesy steps out and the practice of sharp but possibly legitimate business tactics steps in.

It is desirable and most profitable that all dealers in a town and in neighboring towns be able to carry on their business concerns with something like harmony among themselves. To this end they should meet as often as possible and talk over and adjust their differences, if they have any.

Live and let live. Every dealer has sufficient trade in his own legitimate territory to keep him busy without adopting catalogue house methods, providing every dealer will observe the rules of what we should term "Business Courtesy."

The work of this session was then brought to a close with interesting addresses by J. J. Gaston of Winterset,



Iowa, and W. B. Brinton of Peru, Ind., the latter addressing the convention from the manufacturers' standpoint.

#### Resolutions.

The closing session was held on Thursday morning. The Committee on Resolutions, B. G. Wattson, chairman, reported as follows:

We desire to extend the thanks of this association to the city of Sioux Falls for its hospitality and the entertainment it has afforded us as an association and individually, and the favors thus shown will always be remembered by us in the years to come.

We thank the wholesale dealers for the very complete exhibits of the various kinds of Farm Machinery, Wagons, Buggies, &c., made by them, as we realize that such exhibits aid us each in selecting that which may be most useful in our retail trade.

Whereas, The retail Implement dealers have been presented with a contract that deprives them of independence as dealers, and makes them the absolute servants of the great corporate monopoly that is the other party to the contract,

Resolved, That we protest against the greed that grasps and the tyranny that dictates in this manner in great commercial and industrial pursuits that affect so vitally this entire Northwest, and whose actions affect not only the Implement dealers themselves, but every Implement user on every acre of these great States.

Resolved, That each member of this association carefully prepare a classified list of Implement dealers within the territory in which he sells goods, and promptly forward it to the secretary.

Be it Resolved, By the Association, that we are opposed to the selling of goods by wholesalers and manufacturers to the consumers in this territory, and that all such wholesalers and manufacturers be requested to refuse to quote prices, but to refer inquirers to the regular dealers, or if prices are quoted to quote retail prices.

We extend our thanks to the commercial travelers for the very efficient aid they have rendered our association in making this meeting a success.

To the business men of the city of Sioux Falls we extend our thanks for courtesies extended to us and aid rendered our officers preliminary to the meeting and during the session.

The press of the city has been very kind in giving publicity to our gathering, the aims and object of our association and in making daily reports of our proceedings. To them the association owes a debt of gratitude, and to the *Commercial News*, the official organ of our association, we desire to give especial thanks for the untiring interest and devotion displayed by its publisher, E. J. Mannix.

To our president and secretary the success of our meeting is largely due, and they are entitled to the unanimous thanks of the members, both as an association and individually.

We desire to thank the Iowa State Association for their representation through G. G. Gaston of Winterset, who gave us valuable and enterprising talks.

The report of the Committee on Resolutions was adopted, after which the Committee on Nominations announced the following selection of officers, Board of Directors and committees for the ensuing year; the report, after being read, being unanimously adopted by the convention:

PRESIDENT, M. D. Thompson, Vermillion.

VICE-PRESIDENTS, K. O. Stakke, Woonsocket; V. R. Wadden, Madison; W. B. Brown, Pipestone, Minn., and Roy Williams, Sioux Falls.

SECRETARY-TREASURER, W. S. Hill, Alexandria.

DIRECTORS: E. F. Gross, Gettysburg; D. H. Evans, Tracey, Minn.; J. J. Conway, Orient; L. V. Schneider, Salem; B. G. Wattson, Chamberlain; W. H. Wumkes, Lennox; R. S. Lockhart, Clear Lake, and J. A. Bowler, Groton.

FINANCE COMMITTEE: J. J. Nissen, Yankton; Jonah Jones, Sioux Falls, and J. D. Bartow, Plankinton.

GRIEVANCE COMMITTEE: E. B. Van Alstine, Mitchell; J. E. Sinclair, Beresford, and W. S. Hill, Alexandria.

An effort was made to have the next annual convention held at Aberdeen, S. D., but the delegates, by a good majority, again selected Sioux Falls as the place. It was decided to hold the next annual convention at some time between December 1 and 15, 1903, the exact date to be determined by the Board of Directors.

President Thompson announced that in accordance with the sentiment of the delegates present he would defer the appointment of a Legislative Committee until some future time. The convention then adjourned *sine die*.

## THE READING HARDWARE COMPANY'S ANNUAL REUNION.

THE READING HARDWARE COMPANY, Reading, Pa., have a pleasant annual custom of gathering their managers of branch offices and salesmen at the home offices for the purpose of exchanging ideas and making plans for the future. These gatherings are held in December. The meeting for this year occurred last week. All the managers and salesmen were on hand, and were entertained by the company's officers at Reading. The following account of an enjoyable incident of this occasion is taken from the *Reading Eagle* of December 13:

At his home, 730 North Fifth street, John E. Harbster, secretary of the Reading Hardware Company, gave a delightful dinner party to the men in the sales department of the company, managers of branch houses and others. The host was treated to a pleasant surprise. At a quiet interval, Willis H. Bennett, manager of the company's Chicago house, arose and, in a fitting address, presented, on behalf of his fellow guests, to Mr. Harbster a magnificent and costly cut glass punch bowl, accompanied by a dozen glasses, and a handsome sterling silver ladle, inscribed "Presented by friends of John E. Harbster, 1902," all arranged on a large silver tray, upon which the names of the donors were inscribed. Mr. Harbster responded appropriately. The dinner over, the guests enjoyed the balance of the evening in a social way. While the dinner was in progress and after, the string orchestra of the Penn Wheelmen rendered a programme of delightful concert music. Those present were: H. W. Quernheim, president of the Quernheim Hardware Company, St. Louis, Mo., who has been the guest of the Reading Hardware Company the past week; Orton Hill, Lowell, Mich.; Willis H. Bennett, H. B. Johnson and W. H. Clark, Chicago, Ill.; C. S. Packard and H. A. Fisher, New York City; T. B. Hendrickson and W. S. Wolf, Philadelphia; W. R. Johnston, Cincinnati, Ohio; John E. Harbster, Isaac G. Treat, F. L. Stellwagen, G. N. Jacobi, Fred. A. Schumacher, Geo. E. Tyson, B. Luerssen and Samuel B. Richards of this city.

Several of the party this week visited New York, and were the guests of C. S. Packard, manager of the company's New York house. On Tuesday Mr. Packard entertained them at lunch at the Hardware Club. Those present on this occasion were as follows: W. H. Bennett and W. H. Clark, Chicago; Frank Kelley, Charles Randall, George Ogden and Albert Miller, New York; H. W. Quernheim, St. Louis, and Geo. W. Cope, *The Iron Age*. The dean of the sales department is W. H. Bennett of Chicago, who is one of the best known and most popular men in the Western Hardware trade.

## KEN-COLE-BE REMOVABLE LEAF ACCOUNT BOOKS.

THE BENTON MFG. COMPANY, 8 Abingdon square, New York, are offering perpetual account books and binders, for use as cost, price, stock books, &c., in stores and mercantile houses, also for individual, interest bearing or general ledgers, discount, register, line books, &c., in banks and by insurance, railroad and other corporations. Ledgers are furnished with lock and key, no two locks having the same combination, so that sheets cannot be inserted nor removed without the consent of the proper authority. Sheets can be inserted or removed from any number of parts of ledger or binder without closing the book. The ledgers and binders are said to have numerous advantages. Among the points of excellence the following are mentioned: Handling of live accounts only, saves much annoyance and time; no accounts need be transferred, every account being in its right place all the year round; any account can be turned to without reference to the index and parts of a ledger can be distributed among clerks, thus enabling monthly statements to be made out quickly, without delaying current work.

## REQUEST FOR INFORMATION.

Referred to Our Readers:

A jobbing house desires to know the manufacturers of the Gate City Tinnery's Gasoline Stove.

## BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE,  
NORFOLK ST., LONDON, W. C., Dec. 6, 1902.

## The Week's Hardware Trade.

THE excessively cold weather which we have experienced during the last few days has led to the issue of a number of urgent orders for heating Stoves and Hot Water Apparatus. Frost Studs, Skates and Cooking Utensils have shown an improvement, but otherwise new orders are very scarce, and throughout the Hardware manufacturing districts the unemployed are on the increase. The general depression in the building trades is having its effect upon Birmingham, Wolverhampton and Sheffield, where iron foundry and builders' ironmongery generally is made. Makers of Seamless Brass and Copper Tubes, Ship Fittings and Naval Ironwork are of course hard hit by the serious depression in the shipbuilding industries. In fact, trade is not good. The event of the week has been the amalgamation of Lloyd & Lloyd with A. & J. Stewart & Menzies, the combination now being the largest Wrought Iron Tube concern in the world next to the United States Steel Corporation. Makers of Plumbers' Goods are fairly busy, particularly the makers of Cocks, Taps, Hydrants, Unions, while the gas fitting trade shows a distinct improvement. Sporting Guns are in very limited request, and what purchases are made are of high class weapons. The Christmas trade is not what it used to be, and while there is a fairly good demand for fancy goods, particularly electro-plate, comparatively speaking the Christmas trade must be written down as dull. The best Lock trade continues good and makers of Enameled Signs of all descriptions are sending out large shipments, both for home and foreign use. There is a good demand for Japanned Wares. There is a steady output of bright Tinware and the demand for Hollow Ware goods is slightly on the increase. Orders from travelers during the week have been disappointing. In the Cutlery trade the Table Knife branch is finishing off very badly, but a fair business is being done in Spring Knives and Pocket Knives. The Razor trade is quiet. One reason adduced in Sheffield for the sudden slackening off of trade is that the present season's goods were bought much earlier than usual. Large stocks were bought in May and June in anticipation of the coronation festivities, and the sales were of course completely spoiled by the unfortunate illness of the King. The stocks thus bought are now being turned to Christmas use. The Stove Grate trade, like the curate's egg, is good in parts. Some Sheffield firms (the trade flourishes in Sheffield) state that they are busy and have sufficient orders on hand to keep them occupied for months to come, while others report very unfavorably and state that good orders are scarce. Orders that have been placed during the past fortnight or so are entirely for the better class Stoves; there is but little demand for the cottage class. American makers should note carefully that the demand improves year by year for heating apparatus. There is nothing of importance to report in connection with overseas account, the heaviest bulk of goods going to Eastern markets, particularly India and Japan.

## Moving to the Seaboard.

Most readers of *The Iron Age* are doubtless already aware that some years ago the great firm of Nettlefolds, the Screw makers, removed the bulk of their works from Birmingham to Newport, in South Wales, thus having the advantage of contact with the mercantile marine. The experiment has been successful beyond expectation. There has not been a single dispute between masters and men, the works have been in full swing and extensions have been made from time to time. Recently the firm decided to erect other works on the seaboard. They purchased the Great Western wharf on the Usk at Newport, with siding accommodation in touch with the railway system of the district, and are now erecting large works there. Bayliss, Jones & Bayliss, the Midland makers of Nuts and Bolts, are now following suit. They have taken land a little further down the river and below the new works of John

Lysaght, Limited. Lysaghts calculate that they are saving \$50,000 per year in railway rates by their removal from Wolverhampton to Newport, and Bayliss, Jones & Bayliss hope to equal this in the future. The City Corporation of Newport are very anxious to meet the requirements of new firms settling in their area. They have gone to considerable expense in the construction of roads, sewers and a sea wall. By this progressive attitude they have attracted to them saw mills, brattice cloth works, large dry docks, glue and manure factories, Tin Plate and Iron works and other big undertakings.

## American German Wire Convention.

The announcement is made over here that the American Steel & Wire Company are negotiating with the German Rolled Wire Syndicate and the Austro-Hungarian Wire Rolling Works, with a view to the establishment of a community of interests in the sense of the European markets being divided among them, in order that one company, syndicate or works may not compete against another in the same market. I cannot authoritatively state how far this is true or how far it may lead to an increase in price, but I imagine many of the smaller British Wire manufacturers won't be sorry to hear the news.

## Hardware and Metals in Switzerland.

In glancing over the facts relating to the Hardware and metal imports into Switzerland, one cannot fail to note the decrease of the trade done between Switzerland and Great Britain. In the years 1899 and 1900 British exports to Switzerland were respectively 34 per cent. and 35½ per cent. of the total Swiss imports, but in 1901 the percentage decreased to 25 per cent. Although Switzerland's purchases of manufactured goods have been steadily growing during that time, Great Britain's share of this increase has been insignificant. Among the articles in which British exports have declined may be mentioned Machinery, Forged and Cast Iron Goods. During 1901, 27,349 commercial representatives visited Switzerland for trade purposes. Of this number 21,564 represented Swiss firms, 3937 represented German firms, 1182 French, 555 Italian, 204 Austro-Hungarian, 41 Belgian and only 36 British firms. Travelers in Machinery and Metal Goods out of this total numbered 1891. The total Swiss imports of Iron Goods and Machinery exceeded \$10,000,000. The share of the various countries in these imports may be briefly summarized as follows: Forged Iron Goods \$3,400,000, of which \$2,340,000 came from Germany, \$635,000 from France, \$85,000 from the United Kingdom and \$65,000 from the United States. Machinery and parts of Machinery, \$4,320,000, of which Germany supplied \$2,955,000; France, \$410,000; America, \$385,000, and the United Kingdom, \$340,000. Bicycles, \$540,000, of which Germany supplied \$355,000; France, \$90,000; the United States, \$40,000; Austria-Hungary, \$17,500; Great Britain, \$12,500; other countries, \$25,000. The Machine Industry participated in the general depression of 1901, although the exports of Swiss machinery were not so severely affected as the imports from certain countries. The exportation showed only a reduction of about 5 per cent. on the figures of 1900, while fully 31 per cent. less Machinery was imported. The import of Sewing Machines declined 10 per cent.; Agricultural and Domestic Machines, 25 per cent.; Machinery of various kinds (Steam Engines, &c.), 32 per cent.; Machinery for Tools 34 per cent.; Dynamo Electric Machines 48 per cent., and Embroidery Machines, 88 per cent. Germany continued to be the chief supplier. Among goods whose sales can be increased in Switzerland I may mention the following:

Electrical Apparatus of all kinds.	kinds (in different qualities).
Sewing Machines.	Cutlery (superior quality).
Machine Driving Bands.	Prepared Colors in boxes and bottles.
Bicycles.	Varnishes of all kinds.
Forged Iron Goods of all	

## Paint and Varnish for Export.

In the note above on Switzerland it will be observed that there is a demand for prepared Paints and also for Varnish. I note with interest the comments and arguments appearing from time to time in *The Iron Age*



on the subject of Hardware merchants selling Paints and Varnishes. Of one thing I am sure and that is that wholesale houses desiring to develop an export trade are foolish if they fail to secure a good line in Paints (both ready prepared and in bulk) and Varnishes. There is practically no virgin market where Paints and Varnishes cannot be sold, while there is nothing so valuable for filling up space and making a compact shipment.

#### More About South Africa.

Readers of *The Iron Age* must forgive me if I constantly recur to the subject of South Africa in the British Letter. It is important that every development should be carefully noted; for although the bulk of the Hardware Trade in South Africa is and will continue to be British, yet there are openings for Americans at every turn. The immediate danger from the American point of view of Joseph Chamberlain's visit to South Africa is that it may lead to some sort of preferential tariff. A proposal is mooted by an influential contemporary that preferential treatment of British goods should be obtained by adding an additional duty of 33 1-3 per cent. on non-British goods. As the average import duty in South Africa is 7 1/2 per cent., this means in the main that American goods would be taxed 10 per cent., compared with 7 1/2 per cent. tax on Great Britain. First of all it may be noted that certain goods are admitted duty free. These include Agricultural Plant and Machinery, Anchor and Chain Cables, Asbestos Packing, Belting, Boiler Plates, Fire Escape, Fire Hose and Beels, Iron, Steel and other Metal Goods in bars, blocks, ingots, pigs, sheets and sections (except Corrugated Iron), Mining Picks, Skips and Tubs, Metal Pipes for water and drainage, Railway Construction Material, Telephone and Telegraph Material, Wire, Wire Netting, Wire Rope and all Fencing Materials. The other import taxes are Cycles and Accessories, 12 1/2 per cent. It may be noted that South African purchases of Cycle Accessories are mainly American. Gunpowder of all kinds, except blasting compounds, is 6 pence per pound and 7 1/2 per cent. Guns and Gun Barrels, if single barreled, 20 shillings each and 7 1/2 per cent. Pistols and Revolvers, five shillings each. Kafir Picks and Hose, 6 pence each. Most of these goods come from Germany. The average price is 16 shillings 9 pence per hundredweight, and the average weight from 2 to 2 1/2 pounds each. With these and some other exceptions, 7 1/2 per cent. may safely be reckoned upon as the import duty.

How far the preferential tariff would suit South African buyers I am not in a position to say, but it is common knowledge that the South Africans are becoming more and more cosmopolitan in their outlook, and it is doubtful if they would long submit to extra compulsory payment upon goods which they prefer to buy from countries other than Great Britain. Nor am I at all sure that this system of preferential tariffs would materially protect British trade interests. If, for example, the South African market were closed out against Americans by a stiff preferential tariff, it is not for one moment to be supposed that American factories would reduce their output *pro rata*. On the contrary, Americans would probably seek out some other market so that in the long run the British manufacturer would be no gainer. That the South African buyers will go to the best market and will not stand nonsense from anybody is evidenced by a letter from Hillsdon & Son of Rondebosch, Cape Colony. The letter appears in today's *Ironmonger*, and is dated November 8:

We inclose cuttings from two of our principal daily papers, from which you will see that the Americans are gradually acquiring a big share in the Agricultural Implement trade of South Africa. One of the cuttings, you will notice, states that the agents of the McCormick Company for the eastern part of Cape Colony and the Orange River Colony have during the month of October imported no fewer than 500 Binders, over 1000 Daisy Reapers, and a large number of Mowers, Horse Rakes and Sickle Grinders of their principals' make. Really, it is not to be wondered at that the Americans are doing so much business considering how smartly they look after the trade and how promptly they deliver the goods. On the other side, let me give you an instance how British manufacturers treat their customers. On or about June 20 we ordered from a firm in England an ordinary stock pattern trailer. We sent cash for the trailer with our order, and added 15 shillings extra for packing

and for carriage to Southampton. In due course we received a letter acknowledging receipt of the money, and stating that the firm were having the car packed, and would send the receipt as soon as they knew what would be the charge for carriage to Southampton. The trailer has not come by the "Dunottar Castle" nor has it arrived since, and even if it had we could not clear it, as we have not received the bill of lading. With such treatment as this can you wonder at it that foreign firms are securing the orders? We could mention many instances in which large firms of our acquaintance in Cape Town have been similarly treated.

American shippers may be interested to know that the Austrian Lloyds' new service to South Africa base their freight rates and are in many respects identical with the tariff of German lines sailing from South Africa to Hamburg. The present rate of freight from Trieste for Iron and Steel goods is \$7.92 a ton to Mombasa and Zanzibar, and \$8.40 a ton to Beira, Lorenzo Marques and Durban. In the case of bulky machinery, special rates according to size are charged, and the published tariff gives no fixed rates for this class of merchandise.

#### A Note on Russia.

I hear that the Russian Government now desires to encourage business with foreign countries, and has resolved to reduce the tax upon commercial travelers entering Russian dominions from 650 roubles to 200. This tax was originally levied in 1897, and occasioned a great outcry, chiefly in Germany, while in the case of France official representations were made by the French Ministry in St. Petersburg, but without avail. All's well that ends well, and it will at least be pleasant news to Americans who propose taking business trips to Russia that for the future they can do it 450 roubles cheaper. There are undoubtedly great opportunities for Americans both in North and South Russia. Take for example the port of Riga, which is in easy communication with St. Petersburg, and in addition has trading connections with Siberia on the east and with the whole of Western Europe. Among goods which Riga merchants can purchase are the following:

Agricultural and Tools.	Implements	Iron of all descriptions.
Belting.		Iron Piping.
Copper Ore.		Lead and Lead Piping.
Copper Goods.		Machinery, agricultural.
Cutlery and Tools.		Machinery, industrial.
Drain Pipes.		Machinery, mining.
Hardware.		Tin.
		Zinc.

Last year Riga imported 4634 tons of Pig Iron, 1179 tons of Cast Iron, 15,205 tons of Machinery, 5007 tons of Steel, her total imports for all goods during the year reaching the substantial figure of \$27,000,000. During the last 12 months two American firms have established depots of Reapers at Riga, and one of them is pushing the trade right through to the eastern confines of Siberia.

#### FIFTIETH ANNIVERSARY OF THE AMERICAN SHEAR COMPANY.

WITH the closing of the year 1902 the American Shear Company, Hotchkissville, Conn., complete the fiftieth year of their corporate existence, and this time is taken as an appropriate one in which to change the name of the corporation to that used by them as a trade-mark for many years—namely, the American Shear & Knife Company. The company during the last few months have increased their capital to \$100,000, and have made extensive additions to the plant on account of the increased demand for their product. For the last 15 years the active management of the business has been in the hands of Julius H. Cowles, who has also for the last five years marketed the entire production. Mr. Cowles has associated with him Herbert S. Dormitzer, late treasurer of Wiebusch & Hilger, Limited, New York, and vice-president of the Challenge Cutlery Corporation, Bridgeport, Conn. Mr. Dormitzer acquires a financial interest in the American Shear & Knife Company and will take an active part in the selling of the product and management of the business. The officers of the company are: J. H. Cowles, president; H. S. Dormitzer, treasurer, and Edward H. Cowles, secretary.

## SILVER WARE AS HARDWARE.

BY A SPECIAL CORRESPONDENT.

**M**ANY progressive Hardwaremen have taken up the sale of Silver Ware and are finding it not only an exceedingly attractive but also profitable line. It is one that appeals to every householder and follows closely upon Cutlery, and is considered more nearly Hardware than many other kinds of goods that are to be found in the regular Hardware stock.

The Christmas season is primarily the Silver Ware season, although of course much in this line is sold in the spring and summer months—popular for Christmas gifts and popular for wedding presents. But as the largest sales are made a week or two preceding Christmas, now is the best time to add this line to the Hardware stock. In buying the first bill of Silver Ware gauge your prospective business by your sales in other holiday goods. Do not put in too large an amount the first season, but have sufficient stock to make a good display.

About three years ago one of the enterprising Hardware concerns in Massachusetts put in a stock of some kinds of Silver Plated Ware especially for holiday trade. They found it so profitable and salable that since a regular department has been made and a very complete stock is carried the entire year.

In speaking of this line in the Hardware store the senior member of this firm said: "It's a line that sells well through the year; of course, when a wedding occurs we notice an increased sale, and at the Christmas season we are very busy in this department. I would advise every Hardware merchant, wherever practicable, taking up the sale of Silver Ware."

Buy your first stock anyway of your local jobber. If he does not carry a complete line find some jobbing concern who does. Your jobber may have a retail store and in that case he can very much assist you and can give you good advice as to kinds of goods and styles.

In this line most of the manufacturers protect the jobbing trade, and in many cases lower prices are quoted by the jobber than the maker quotes to the retail trade.

There are many articles that at once suggest themselves in this line—articles for which people will be looking at Christmas time. Chafing dishes come in the line of Silver Ware—of these the variety is extensive, but a few good styles make a fine showing and will find a ready sale. Flatware, Knives, Forks and Spoons are goods used by every one, and are always salable. Flatware is sold on closer margin of profit than any other Silver Ware. In Flatware be sure you get one of the good standard makes. The best Plated Knives and Forks to buy are those that can be sold profitably at from \$2.50 to \$4 a dozen. In Silver Hollow Ware there is a better profit; in this line, the first year at least, do not buy many articles that will have to be sold at over \$2 each.

The J. B. Varick Company of Manchester, N. H., are one of the most successful Hardware concerns in New England, and undoubtedly do more business than any other like concern in New England outside of Boston. Their opinion and methods of doing business are of value to other Hardwaremen. The Silver, Cut Glass and Jewelry department of this concern has become an exceedingly important factor in their retail trade, and, in fact, in their jobbing business as well.

Thomas R. Varick was asked how they had built up such a business in a Hardware store. "It is very simply and easily done," he replied. "We had for many years been selling some Silver Ware and each season have added to our line. I would advise the retail dealer to buy from the jobber, and to buy mostly staple goods, not many novelties at first."

The following six rules are well to remember when this line is added to the Hardware stock:

1. Be sure you include in your stock some brands of goods that are well known.
2. Have a good window display of Silver Ware.
3. Show your stock in an attractive manner near the front of the store.

4. Personally call customers' attention to the new line.

5. Be sure your prices are right, especially on well-known goods.

6. Advertise Silver Ware, and make it a point to let people know your stock is new and up to date.

E. D. I.

## NEW ENGLAND HARDWARE DEALERS' ASSOCIATION.

**T**HE tenth anniversary of Ladies' Night was held by the New England Hardware Dealers' Association at the United States Hotel, Boston, Wednesday, December 10. There was a reception from 5.30 to 6.00 p.m., immediately after which dinner was served. The attendance was large and the meeting highly successful. Following the dinner there was an attractive programme of speaking, music and elocution. Music was furnished by the Copley Orchestra, composed of ladies, and Elbert Foland of the Emerson College of Oratory recited. The principal speaker of the evening was Rev. George E. Martin, D.D., of Lowell, Mass., who spoke on the topic, "Hardware Gospel." His address was interesting and at times humorous. The Hon. George A. Hibbard, Postmaster of Boston, delivered an interesting address upon the post office, giving statistics of the past and present business of that important branch of government, and illuminating the subject with a number of good stories, some of which were based upon actual experiences with post office patrons.

At the business meeting, E. Loring Richards offered an appropriately worded resolution of sympathy for James A. Farless, the honored secretary of the association, who recently met with a serious accident, which still keeps him indoors. Mr. Farless is a veteran Hardwareman and has been secretary of the Hardware Dealers' Association since its organization. He has always been most active in the social affairs of the association and his absence was much regretted. During the business session H. M. Sanders acted as secretary. President Sewall D. Balkam presided at the meeting and at the banquet which followed.

The following committees had charge of the evening: Entertainment Committee—D. Fletcher Barner, Henry M. Sanders, Geo. J. Mulhall, Charles E. Adams, E. L. Richards. Reception Committee—Samuel H. Thompson, E. C. W. Bliss, Henry M. Sanders, L. W. Thompson, John B. Hunter, James P. Mackay, Thomas H. Baldwin.

## NEW CASTLE FORGE & BOLT COMPANY.

**T**HE Board of Directors of the New Castle Forge & Bolt Company, New Castle, Pa., met on the 8th inst., and decided to increase the capital stock of the concern from \$75,000 to \$300,000. The increased capital is to be used for the extension of the Bolt, Rivet and Forging lines. The company state that they are the only concern at the present time that have facilities for making all the Forgings for steel and wooden cars, including Chain, and that they have met with much success in securing business along these lines. Their present facilities are too limited to supply the demand, and they are going to put up an additional building 80 by about 700 feet, and move all Bolt, Rivet and Nut Machinery into this building, and in addition to the present machinery add the latest improved machines sufficient to turn out about 200,000 Bolts per day. The present building will be equipped with forging and punching machines for the manufacture of Car Forgings, Washers, &c.

At a meeting of the stockholders of the Automatic Wringer Company, held on November 26 at Muskegon Heights, Mich., it was decided to increase the capital stock of the company to \$75,000. In view of the fact that in the past year the business of the company has grown greatly, it was found necessary to increase the stock to provide the necessary facilities to handle the increased business. The company have made improvements in their Wringers which have been well received.



by the trade all over the country, and they are running their large plant to its full capacity.

## HOW TO ARRANGE THE STORE WINDOW.

BY GEORGE L. GEIBEL.

**T**HE show windows of the average Hardware store are way below the average in attractive, business getting displays. This condition exists in large cities as well as in country towns. Every merchant should try and make his store windows and his store entrance as clean, attractive and inviting as he would his home. The more attention he gives to this feature the more clean, profitable trade he will be able to command. One of the common mistakes is crowding windows in order to show as much of the stock as possible at one time. I don't believe the average person is interested in Plows, Ice Cream Freezers, Pocket Knives, Wood Saws and Fertilizer all at the same time, yet this is an every day sight.

### The Best Advertisement.

The show window is the store's best advertisement. The more attractive it is the better the advertisement. Be as liberal in window expenses as in other advertising, and there will be less complaint about poor business and that advertising does not pay. A good window display will sell goods without the help of newspaper advertising. I call to mind several instances where it has been tried with good success. I have found that it is almost impossible to get satisfactory results, however, without printing prices plainly on the goods.

### Window Properties.

It is always well, where windows will permit, to use small, neat shelves, arranged on movable brackets; also nickel plated window trees, glass shelves, &c. Mechanical appliances that can be used with profit are scarce and expensive. My own experience has been that they are hardly worth bothering with: First, because there are very few that are adaptable to the Hardware trade; second, because they take up too much valuable room; third, because the mechanical feature gets all the attention and the goods scarcely any. The best window appliance I know of, while it is not mechanical, is a well studied arrangement of mirrors. Have them so arranged as to be higher than the heads of passersby and you will have something that you can adapt to any window and that will be new every day in the year. These changing illusions are bewildering and never grow old.

The best way to secure a variety of display is to use a variety of stands of different heights and shapes, shelves and other window fixtures. However, if this is not the case, by frequent changes and the use of different colored backgrounds and bottoms you will be able to get ample variety. All windows should be inclosed with glass sash on the inside and ventilated to prevent goods from getting dusty, rusty and shopworn.

### Lights and Backgrounds.

Windows should be lighted from overhead either by chandeliers or arc lights; the latter being preferable, as it admits of free head room for the display of tall goods, also the arrangement of pyramids and other tall effects.

The color of backgrounds depends much on the goods. Bright goods look best on black or dark green, while black or colored goods look best on red or yellow. I will add right here that if you have never used colored cheese cloth or crepe tissue paper, and will give them a trial, you will be surprised at results. These goods, being loose, can be easily adapted to any shape, thus producing striking effects such as plait work, drappings, puffs, &c., at trifling expense.

### Selection of Goods to Show.

Small goods, selling at from 10 cents to \$1, as a rule yield best returns, yet goods such as Ranges, Bicycles and other large goods are often sold from being seen in the window. Don't crowd windows too full of goods. One kind at a time is better than two, but never put in more than a line. Large goods, such as Stoves, Ranges,

&c., are most attractive when shown one at a time. Seasonable goods should be shown at least two weeks in advance and frequently during the season. Windows should be changed at least once a week, if for no other reason than washing and dusting thoroughly; but it is better to take a little more time and change the goods at the same time.

### The Daily Paper.

Always have your windows filled with the same goods as you are advertising in the daily paper. The paper talks to the reader, the window talks to those who don't read the paper. In this way you are likely to get best results.

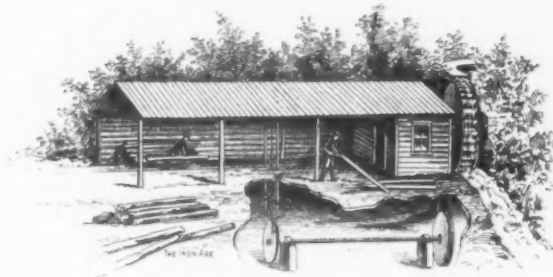
Don't underestimate the value of window cards; these can be produced at little or no expense and the printing can be done in your own store with the help of a set of rubber type. Attractive, well worded window cards go a long way in the success of a profitable window display.

### The Window Dresser.

In almost every store there is one person who has better taste for window work than any of the rest. Encourage him by turning this work over to him and hold him responsible. Don't ask him to wait on trade while he is doing this work any more than is necessary, as by so doing he may lose a good chance to complete an effect that he has in mind at that time and thus spoil the display. Don't limit him to time and don't be too careful about an extra dollar of expense, as this may determine the success or failure of an attractive window.

## THE OLD MILL.

**A**N old mill was the subject of a Christmas window display of J. M. Page & Co., Naugatuck, Conn. The window was dressed to represent a country scene with miniature trees in the background. In front of these stood a saw mill made after the style of those constructed long ago. The water wheel described in *The Iron Age* of December 12, 1901, was erected at one end of the saw mill and the water was fed to it from a sluice coming from the background. After passing over the wheel this water ran in a graceful stream



The Old Mill.

along the front of the display. The wheel was belted to the shaft, at the end of which a crank and pitman gave a reciprocating motion to the jig saw, which was made out of a Hack Saw blade. The display and mechanism are illustrated in the accompanying illustration. The display was arranged with a great deal of care and attracted much attention to the window and to the store, as their Christmas displays always do.

## MISCELLANEOUS NOTES.

### The Supreme Carpet Sweeper.

The Goshen Sweeper Company, Grand Rapids, Mich., have recently brought out the Supreme carpet sweeper to meet the demand of those who desire something especially fine in appearance as well as in workmanship. The sweeper has dust proof openings, rubber friction rings, broom action, &c. It is manufactured from selected stock, the case being made from figured bird's eye maple, laurel and curly birch veneers.

### Keystone Valve & Mfg. Company.

Keystone Valve & Mfg. Company, 2623 Sarah street, S. S., Pittsburgh, Pa., are preparing to manufacture plumbers' supplies on an extensive scale. They propose making brass goods of every description.

### The Racine Fire Door Hanger.

The fire door hanger, illustrated herewith, manufactured by Midland Iron Works, Racine, Wis., is provided with lateral adjustment, the same as the Wilbern designs. This is referred to as a very desirable feature, as the doors work smoothly at all times. Should chafing occur on the wall all that is necessary is to loosen the lock nut and run the door away from the wall by turn-



*The Racine Fire Door Hanger.*

ing the threaded axle. On the other hand, doors can be hung close against the wall to prevent the possibility of drafts. The offset helps to prevent jumping the track and serves as a guide in hanging the doors. The hanger has hardened steel roller bearings and a malleable iron sheave. The hanger is made to conform to the printed requirements of the National Board of Underwriters.

### The Salisbury Automobile Wheel.

The Salisbury Wheel & Mfg. Company, Jamestown, N. Y., are offering the automobile wheel shown herewith. The company state that the hub is positively



*The Salisbury Automobile Wheel.*

torsion proof, this being accomplished by the ribs of the hub. The hubs are made of malleable steel, in two parts, to hold the spokes firmly, and yet can be easily taken apart at any time for repairs. A spoke can be taken out and replaced without removing the tire or rim by taking off the outer flange of the hub. The size and appearance is the same on both front and rear axle, this result being obtained by coring out the rear hub. The spokes are from  $\frac{1}{8}$  to  $\frac{1}{4}$  inch wider at the inner end, to render it impossible to withdraw them unless the flanges are loosened, the tendency being always to still retaining its lightness. The spokes are sufficiently heavy at the point of entrance to completely fill the hub.

draw toward the center. The spokes and felloes are made from the best selected second growth hickory and oak. The wheels are adapted to all kinds of tires. The company remark that it is a well proven fact that the wood spoke wheel is the best for automobiles, because it is stronger, has greater lateral spring, is easier cleaned and looks better.

### The Adams Patent End Plate.

The accompanying cuts represent the Adams patent end plate used on the Spalding bolster spring. The plate is alluded to as not bending or breaking, as preventing bars splitting or checking, as keeping springs

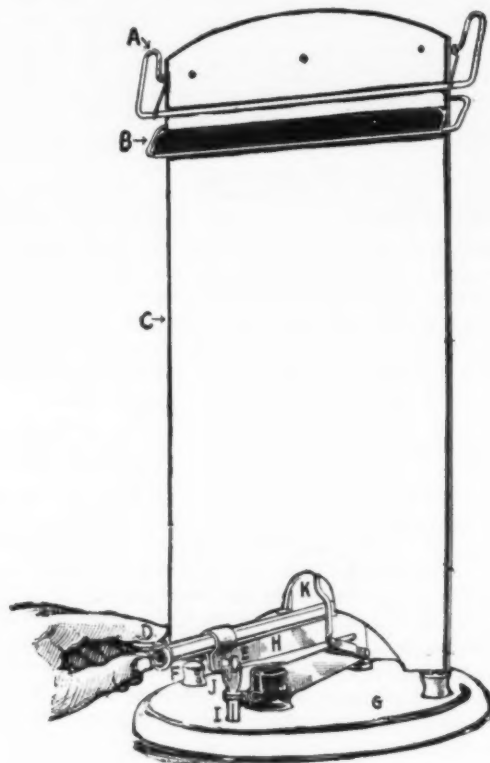


*The Adams Patent End Plate.*

from getting out of position or twisting out of shape, so they will work better and last longer, and as not cutting the bolster stakes. The clip tie is heavy and solid, the crank plates are dust and dirt proof, and the bars and steel are referred to as of the best material. The end plate and bolster spring are offered by E. B. Adams & Son, Racine, Wis.

### The Perfect Copy Holder.

The accompanying cut illustrates a copy holder for automatically indicating the line to be copied. A slight pressure on the key D raises the copy, line by line, thus preventing skipping or repeating any part of the article to be copied. The point is made that while the copy



*The Perfect Copy Holder.*

holder is useful in any office, it is most desirable when copies are required from legal documents, real estate transfers, tabulating work, lists of names, &c., which carry little or no connection from line to line in the mind of the copyist. The holder is referred to as handsome and ornamental in appearance. It is offered by the Scranton & Co., New Haven, Conn.